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BETTER FRUIT

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NUMBER 8

SPECIAL FEATURES IN THIS EDITION

Pruning, Spraying, Fertilizing,
Grade and Pack Rules and
Apple Price Conditions



Courtesy Pearson-Ryan Company

It is hoped this illustration will suggest to every fruit grower and farmer the importance of a good vegetable garden. With the use of a steam pressure canning outfit every fruit grower can put up enough vegetables to last during the entire winter—a big saving in expense. Fruit growers with small orchards will find truck gardening a very profitable diversity line.

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, HOOD RIVER, OREGON

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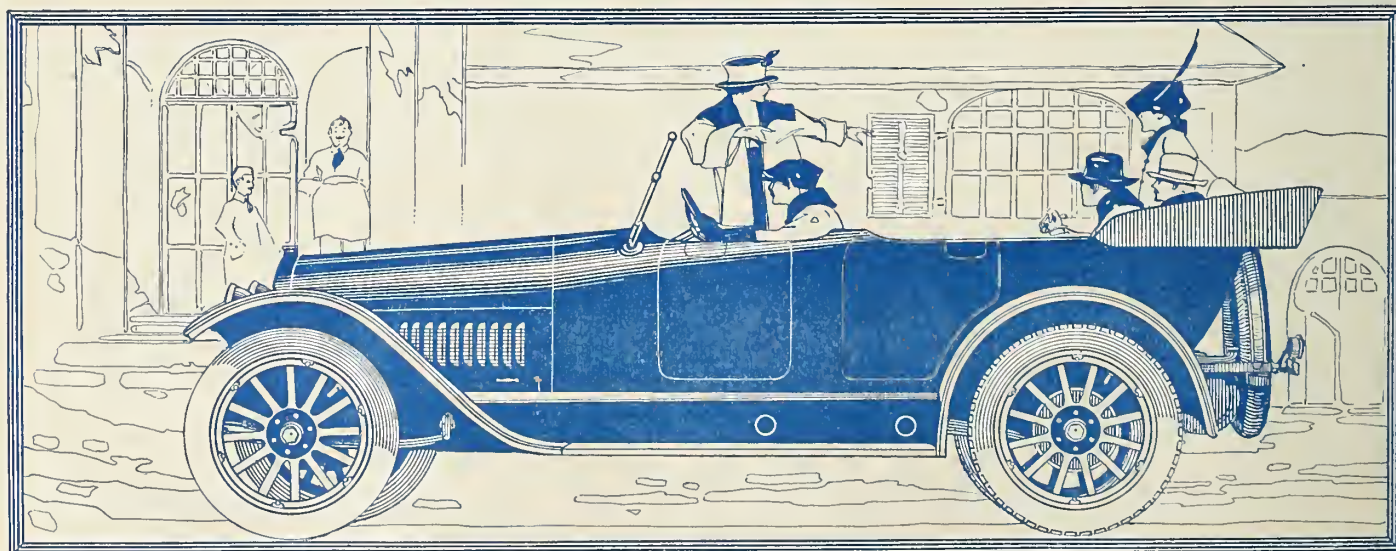
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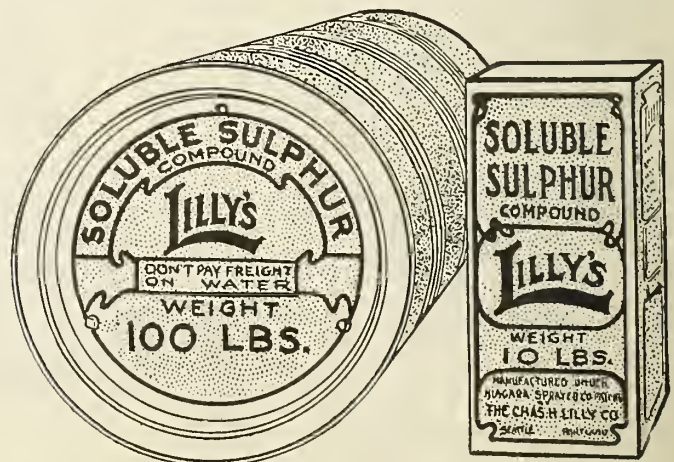
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BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

Apple-Price Conditions, 1916—Can We Do Better?

By E. H. Shepard, Editor "Better Fruit."

I AM convinced we have the ability to solve the biggest problem that confronts the apple grower today,—the marketing and selling of our fruit at profitable prices.

I believe if the proper effort is made by the fruitgrowers in the right way that organization can be perfected that will control our marketing and selling in such a way as to secure greater efficiency, elimination of production at a loss, wider distribution, greater consumption, better prices, a good living and a fair profit on our investments.

We all know we have been experimenting for years, especially on the marketing of our apple crop. We know, and most of us will admit, we have made mistakes. It occurs to me we have had about enough experimenting. We have got experience, plenty of it. It has cost us a lot of money, yet we remain unorganized, with no settled policies that are acceptable and satisfactory to a large majority. It seems to me there is good reason to assume we have arrived at a period and are in a condition, financially and otherwise, when it becomes necessary to take stock. By that I mean we should review the past, profit from our mistakes, analyze the present and plan for the future with united effort and carry out our plans with determination. In other words, "it's time to clean house and call for a new deal."

Are you satisfied with this season's prices?

Before answering the question let us take stock of conditions. What I omit you must take into consideration. You must verify my statements and correct them, if in error, before determining for yourselves that this season's prices are satisfactory or unsatisfactory.

The apple crop in 1915 was 76,000,000 barrels.

The apple crop in 1916 was 67,000,000 barrels. 15 per cent less than last season.

The government estimate on value 1915 was \$2.02 per barrel.

The government estimate on value 1916 was \$2.76 per barrel. 36 per cent higher this season.

The apple crop on cold storage December 1st, 1916, was 20 per cent less than in 1915.

The apple crop of the Northwest was less than 6 per cent of the total. Our increased crop added 3 per cent more in 1916 to the total in 1915. The crop of the balance of the United States was 18 per cent less in 1916, making the total crop of the United States, as before stated, 15 per cent less than in 1915. Business is prosperous all over the United States except in a few

spots. There are no unemployed. Nearly all classes of labor are getting higher wages; money is plentiful; bank deposits are large and interest low.

There is not a district in the Union where the quality of apples is reported high grade in 1916 except the Pacific Coast States of California, Idaho, Montana, Oregon and Washington. California ships outside the state only Newtowns, which are exported. Idaho, on account of early frost, lost almost its entire crop. Montana produces at present only a few hundred cars, leaving only two states, Washington and Oregon, with a crop high class in quality.

Every product of the soil that the farmer produces except rice has advanced in price. Some products being more than doubled. Nearly every manufactured product has increased in price by leaps and bounds. The only product of the soil, except rice, that has not increased in price is Northwestern box apples.

Fellow fruitgrowers, why? Are you satisfied?

Our comparatively low prices are not caused by depression, because the country is prosperous. They are not due to our people being without money, because everybody is at work at good wages. They are not due to lack of money, because money is plentiful. In fact America today is the richest nation on the globe.

Interesting information on finances of the United States are shown in the statement of Edward N. Hawley, chairman of the Federal Trades Commission, in an address before the Ohio bankers, in which he stated the banking capital and surplus of the fifty-six domestic banks of England (exclusive of the Bank of England), with eight thousand branches, was \$500,000,000. The capital and surplus of fifty-seven overseas banks was \$500,000,000; the capital and surplus of domestic banks, loan and trust companies in the United States is \$3,400,000,000—more than the combined banking capital and surplus of all other nations in the world. With all this wealth, with every other commodity greatly increased in price, why are Northwestern box apples showing no advances, with large quantities selling for less than in 1915.

There must be a reason.

I submit the problem to you for your consideration. In doing so permit me to avail myself of the privilege, if you please, of giving you some personal opinions. I feel justified in my remarks with the hope the growers and marketing concerns, as well as other identified interests, will tackle some of them,

and in doing so create a movement that will evolve a plan that the majority of the apple growers will adopt, with reasonable assurances of securing better prices.

I believe our success depends on organization and control, not in the Northwest as a whole, but in each individual district.

In other words, it is my opinion, take it for what it is worth, that each individual district has got to work out its own solution, boss its own job, instead of "letting George do it."

We grow the same varieties, but they vary in color, size, grading and packing and other characteristics. It is a recognized fact by the trade the same variety in the same grades and same sizes vary in value in different districts. Few districts will be content with a less price for the same variety, grade and size, sold through a common co-operative selling organization. I don't believe any more convincing evidence on this statement is necessary than to call your attention to the jealousies aroused by differences in prices obtained by the North Pacific Fruit Distributors. The further fact that they abandoned the central selling plan, placing the matter of selling and prices in the individual districts, seems conclusive.

There are some features common to all districts for general improvement that seem worthy of attention.

We all know that we planted extensively, but, alas, not wisely. We planted hundreds of thousands of acreage, building an output which developed suddenly into millions in 1912, without either adequate or satisfactory selling organization. I don't wish to comment at length upon this acreage. It represents an investment that must be saved if within our power. But I do wish to impress upon your minds a few facts that are obvious to those who will pause and consider, take stock and find out where they are at.

There are thousands of acres of apples in districts where soil, climate or conditions are such that apples will never make for the owner the profit per acre he can make on other crops. The only sane advice is, dig up the trees and grow some other crop.

Another feature of the apple business that needs correction is varieties. We have about two hundred varieties, more or less. I believe the varieties that will prove profitable to a certainty in future years are few, the list short enough to name in a minute,—alphabetically,—Arkansas Black, Delicious, Gravenstein, Grimes Golden, Jonathan, King, Ortley, Rome Beauty, Spitzen-

berg, Winesap, White Winter Pearmain, Winter Banana, Yellow Newtown Pippin.

I doubt if the real money makers in the list will exceed half the number. There is a doubtful class, as specified by Mr. Sickles at the conference of the Ninth National Apple Show, as follows: It is a question of judgment to determine the best thing to do with them. The following may be mentioned in the doubtful class: Aiken Red, Baldwin, Delaware Red, Gano or Black Ben, Hydes King, King David, Mammoth Black Twig, Missouri Pippin, Red Cheek Pippin, Stayman, Vanderpool, Wagener, York Imperial.

There is a third class that are not grown in any great quantity, but of which some orchards may have quite a few, which in a commercial way have never proved satisfactory. In addition it may be stated that in all probability, if records were searched during the last four years, they would show that none of these varieties that were shipped out of the state have actually paid the growers the cost of production. This list, as specified by Mr. Sickles, consists of Apple of Commerce, Ben Hur, Bismarck, Canada Red, Chicago, Champion, Fall Wine, Hoover, Ingram, Kaighn Spitzenberg, Kentish, Kinnard, Manning, Northwest Greening, Pawaukee, Rambo, Salaom, Shackleford, Wallbridge, Willowtwig.

The first list includes thirteen varieties, of which I believe about eight varieties will permanently prove good money makers. The second list consists of thirteen varieties. In this list there are scarcely any varieties which would be considered good enough commercial varieties to justify any great hope. However, it is possible that while no general trade may be developed for them that would bring satisfactory prices the opportunity for disposing of them at fairly satisfactory prices, prices that would afford the grower a little over the cost of production, may be found in limited districts, particularly in years of light crops.

The third list consists of twenty varieties. I don't believe there is a single variety in this list that could be considered a commercial variety that would justify its continuance. However, it may be that many growers who have them may develop a local trade for small quantities, which might be a better proposition than digging them up or grafting them over.

In addition to this there are about one hundred and fifty varieties more that are grown in small lots throughout the Northwest, none of which will probably pay the grower a profit.

To go into this matter in detail would require more time than the limited space I have would permit. Therefore about the only thing I have further to say on this subject is that every grower should give the matter careful attention, ascertain his cost of production, find out his average price for the last four years and decide the matter for himself.

Grades and sizes of varieties that don't pay is another problem we must

face. There are some varieties that bring fair prices in Extra Fancy and Fancy, but in C grade do not pay the extra cost of packing. The same is true in reference to small sizes, yet we go on packing at a loss or receiving less than we could sell for at the vinegar factory. When a customer orders a box of apples he does not want a box of marbles. When an Easterner buys a box of Northwestern apples he expects quality, not trash. We are ruining our reputation and killing our markets by putting on the markets poor varieties, low grades and marbles. An illustration is frequently more convincing than argument.

The City of Portland is an illustration of a market which apple growers persistently and continuously have done their utmost to demoralize. It is a prosperous city of 280,000 people or more. The people are well-to-do—they buy quality goods in all lines of merchandise, clothing, food, everything generally except apples. Within wagon haul are located many apple orchards. Cheap river transportation reaches nearly every fruit section in the state except Southern and Eastern Oregon. When an apple grower in Oregon has a variety so poor he is afraid to put on freight charges he ships it to Portland. When he has a good variety he ships the Extra Fancy, Fancy and C grade East, the balance he packs up and dumps on the Portland markets.

Portland should consume from 500 to 1,000 cars of good apples. The growers have spoiled their own home market for good varieties and good grades with trash.

Does it pay to grow poor varieties and pack poor grades and small sizes. My advice to every apple grower is, figure it out in accordance with your own costs, whatever they may be. As an illustration I will use my way of figuring, in round figures:

Cost of boxes, k.d. ....	.105
Cost of hauling .....	.005
Cost of making up boxes .....	.01
Cost of paper .....	.05
Cost of packing .....	.04
Cost of nailing up and stenciling.....	.01
Cost of packing house sundry .....	.01
Total .....	.23
Value at vinegar factory, \$12 per ton....	.12
Total .....	.35
Add the cost of Association, labeling, cold storage, advertising and selling....	.20
Freight to east .....	.50
Jobbers' profit, say 10 cents .....	.10
Grand total	\$1.15
Any grade or size that will not sell at wholesale or in the East for more than \$1.15, with me, goes to the vinegar factory. Equivalent to 65 cents net cash f.o.b.	
Take this wholesale price of.....	\$1.15
Omit value at vinegar factory previously included .....	.12
Balance	\$1.03
Add the cost of packing .....	.05
Add the cost of hauling to packing house. ....	.01
Add the cost of grading .....	.04
Add the cost of hauling to depot.....	.02
Add the cost of growing .....	.35
Total	\$1.50

Any variety that won't wholesale in Eastern markets at over \$1.50 will not

pay more than cost. However, this determination should not be made too hastily by the grower, or on one year's returns. The proper method would be to take a four or six-year average of the past because an even number of years would include an equal proportion of low and high-price years.

My figures are not exact, but sufficiently so to illustrate. In this work we should have the assistance of every selling concern in furnishing the selling prices in the past four or six years. In furnishing this information they will not only help us to eliminate packing or growing at a loss, but they will eliminate for themselves a lot of grief and a lot of cussing.

Just a word about the importance of apple recipes for dessert in connection with sales and consumption. I think too few of us realize its importance. Every box of apples should contain a neat, small booklet with a few good recipes, because more apples are eaten cooked by our customers than fresh. If you don't believe it just observe the next time you visit any well-to-do family in a city, or take a meal in any hotel, restaurant or dining car. I'll venture the statement that almost 99 people out of a hundred of the well-to-do eat an apple baked, as sauce, in pie or some other cooked form to one apple fresh.

A word to the ladies, to the ladies in the cities, I mean the ones who are hollering about the high cost of living, and boycotting eggs, butter, turkeys, chickens and a lot of other things we farmers produce by working hard from sunup to sundown, including apples. We farmers and fruitgrowers at best are making only a modest living. If you dear ladies in the city will buy just a few less silk stockings, a few less high-price dresses, a few less expensive bonnets and curtail your expensive habits, in a word, put less money on your back and your indulgences and more money into good, wholesome food, particularly box apples, you will have better health and more money at the end of the year.

From my past experience it seems to me that we are justified in the conclusion that each district must work out its problem of organization, control and selling. To perfect an organization requires a great many meetings of the people interested. You can understand the impossibility of getting growers from all of the different districts together frequently enough to perfect the right kind of organization, on account of the time required and the expense. However, I do believe that representatives from each district should attend the Growers' Conference at the National Apple Shows, for the purpose of getting the benefit of each other's experience, as well as for the purpose of working along the same lines so far as advisable and necessary.

A long time ago I made the statement, and have repeated it many times since, that I did not believe that any co-operative selling concern would be a success until each district was organized. Our experience, it seems to me,

has verified this opinion. I firmly believe we should receive better prices this year. I have asked the question, Why? It is because we lack organization in each of the different districts, because we lack control. We are too much divided in practically all of the districts. By that I mean there are too many different ways of selling, too many competing concerns without any one concern handling a sufficient amount of tonnage to control the situation. Where there are twenty concerns in a district, each handling a small amount of tonnage, there is a large duplication of overhead expense. Each one employs a sales manager, whereas this part of the business could be handled by comparatively a few and the rest of the money, which is spent on sales managers at the present time, could be used to employ salesmen to cover the different districts in the United States thoroughly. Where you have a number of institutions and one in control with a large tonnage, that institution is a big factor in setting and controlling the prices, whereas with a large number of small institutions, with each one competing with no one in control, it occurs to me that the weak sister is the one that frequently and most frequently sets the prices.

Suppose your association or selling concern puts up a number one grade

and pack, high class in every particular. It has an actual market value of 25 cents more per box than some of the other concerns. If the weaker concern putting up a poor grade sells at \$1 per box then your price is \$1.25. If the weaker sister sells at 75 cents your price is pulled down to \$1.

I am inclined to believe that this has actually occurred, that the price is unnecessarily low this year in accordance with all conditions as previously specified, and that the reason for it being low is that there is "no control"; that some of the weaker sisters have set the prices, or some of the growers who are awfully anxious to realize money quickly, f. o. b., have sold at unnecessarily low figures.

Conditions may be different in different districts. There are different ways of selling our apples. They can be sold through co-operative institutions, through private incorporated companies, f. o. b. cash sales, by auction, on consignment or on commission with guaranteed advance. It is up to each district to determine which will be the most satisfactory way. A large majority having adopted a certain plan for disposing of our crop would control the situation if the method selected was the best.

The day of the small jobber and the small manufacturer, if we are to judge

from modern business, is practically past. The business of the United States today is being done by large jobbers and large manufacturers. Large institutions, on account of the large volume of business, can systematize their business more perfectly; they can introduce systems of efficiency, hire men of the greatest ability; therefore they are equipped for doing a better business, and that they are successful is evident from the number of big manufacturers and jobbers that are in existence today and the lack of small ones.

It seems to me this pertains to the apple business just the same as any other business. If we have fifteen or twenty concerns you know and I know they are limited in the number of salesmen they employ. Naturally these salesmen are sent to the cities and territories where the largest number of cars can be sold. Hundreds of smaller cities and towns are neglected. The result is the large cities are congested and glutted, the smaller ones overlooked. The prices in the big cities are low on account of the glut. It seems to me if we had a fewer number of concerns, or strong combinations of existing concerns so that the territory of the United States could be covered more thoroughly and more efficiently, a greater volume could be sold and at less expense.

Spraying Orchards with Reference to Aphis Control

By S. W. Foster, Entomologist and Manager Insecticide Department General Chemical Company, San Francisco

TO obtain the best results from the use of sprays in an orchard, we must use and intelligently apply that material or combination of materials which will do the greatest amount of good toward controlling all the insect and fungus diseases detrimental to the particular orchard treated. Washington fruitgrowers are familiar with the usual practices for the control of codling moth, San Jose scale and some other orchard pests. However, there are certain troubles, particularly powdery mildew and some species of aphids which are not so well known but which are becoming more generally important each year to the fruitgrowers of this state because of the increased amount of damage done to the trees and fruit. The really successful fruitgrower of the future must take full cognizance of all pests and conditions which lessen the amount of fruit produced on a given area or prevent this fruit from being of the best possible quality.

What I have to say in this article deals primarily with the control of aphids,—the rosy apple aphid, green apple aphid and woolly apple aphid. These so-called plant lice can be successfully controlled without increasing materially the number of applications of spray now applied each year to the average well-cared-for orchard. A few words regarding the life history and habits of these insects might not be out of order, although I shall not attempt to give you a technical detailed discussion of the subject.

Woolly apple aphid has one form above ground which attacks the leaves and twigs primarily during the growing period. Another form exists throughout the year on the roots. These forms are interchangeable, as it were, because some of those living on the limbs and branches of the tree during the summer go to the ground, while many of the ground-inhabiting form move above ground to the limbs and branches. This migration from roots to limbs and from limbs to roots keeps up to some extent throughout the growing season. However, the principal migration from the trunk and limbs of the trees to the ground takes place about the time of the first cold nights in the fall of the year and the principal migration from the roots to the limbs and twigs takes place comparatively early in the spring. In the Eastern States there are usually six generations per year, but the life history has not, to our knowledge, been carefully worked out for the Pacific Coast territory under the varying conditions. The insects pass the winter, however, in our Eastern States both as eggs and as over-wintering lice on the roots of the trees and in some of the warmer regions individuals live throughout the winter in protected areas of pruning scars, wounds and rough places on the bark of the tree.

In addition to the migration from the roots to the trunk and limbs of the trees of apples, and vice versa, there is also a cross migration from apple trees to elm trees and back again. The

eggs are often laid during the fall of the year in crevices of the bark in elm trees, although these eggs are frequently deposited on other trees. In the spring the eggs hatch into forms producing what is generally known as stem mothers. These stem mothers may be often found, by careful examination, upon or near the buds of elm trees or other trees, where the eggs have been deposited, before the buds open in the spring. Soon after the first leaves appear the stem mothers begin feeding on the under side and the leaf soon curls about the insect, giving some protection for the production of the first generation of young lice.

This generation is wingless and lives either on the curled leaves or upon the tender twigs. The third generation can usually be found on the elm leaves or leaves of similar plants, but this generation is winged and is known as the spring migrant. It usually migrates by flying to apple trees or similar food plants, settling on the leaves, twigs and young watersprouts. This winged migrant produces the fourth generation, which is wingless and which is usually the first important generation to be found on apple trees and is the generation which is first observed in any considerable numbers by the fruitgrower, making its appearance noticeable during June. This generation matures comparatively quickly and produces another, which is the fifth generation, giving two full generations on the apple tree of wingless individuals. The greater part of this last generation

usually migrates from the young wood growth down the trunk to the roots of the tree, and this migration may extend over a period of two or more months, being most noticeable with the advent of the first cold nights in the early fall. All the individuals of this generation do not go to the roots, but some remain above ground and produce a generation of winged forms known as the sixth generation or fall migrant, which may be found about the trees in late fall but generally migrates to elm trees, where they settle upon the bark and produce true sexual forms, the females of which deposit a single egg each in the crevice of the bark, where the egg passes the winter.

It should be understood from the outset that means of controlling this insect must either be very thorough, which would also be expensive if the work is successfully done in a short time, or else that control measures must be practiced for a considerable length of time, which, with this special insect, usually involves careful work for at least three full consecutive seasons. Obviously, the more of the fall migrant that can be killed before they go to the ground or migrate to other places the better. Following this, the next practical means is to kill, by the use of contact insecticides, during June, July and August, as many as possible of those insects which can be found on the trees during that time. Specific direction in this regard will be given in the latter part of this paper after brief mention of the other two species of aphids under consideration.

The green apple aphid, usually known as the leaf-curling aphid, is in many orchards, especially on young trees, the most noticeable species of the three under consideration. Eggs are deposited in the fall of the year usually on the young wood growth and watersprouts, sometimes in great numbers. These eggs pass the winter as such, hatching in the spring of the year about the time wood growth starts. All eggs are generally hatched by the time the buds are open. From those forms hatching from the over-wintering eggs is started the production of an enormous number of individuals, which goes on for generation after generation for two months, or sometimes longer if the weather remains comparatively cool. Roughly speaking, about twenty-five days are required for the development of a single individual. The green apple aphid does some injury to the fruit by puncturing the skin, but its chief injury is caused from feeding on the foliage, resulting in curling, dwarfing and often killing the leaves to such an extent as to prevent further wood growth on the twigs attacked.

The rosy apple aphid is primarily a pest of the fruit. Injury from this species results in producing the so-called cluster apples, which are knotty, misshapen and of little or no commercial value. This is caused by the feeding of this species while the fruit is small. This species also feeds to some extent on the foliage and is undoubtedly quite a factor in aiding the spread of pear blight. This is also equally

true with the green apple aphid previously mentioned. The eggs of the rosy apple aphid generally hatch a little later in the season than those of the green apple aphid. This species is particularly noticeable on the leaves around the fruit clusters and on the stems of the fruit. This species usually disappears from the trees by mid-summer, but appears again in small numbers in the late fall where eggs are deposited on the trunk and older growth, but are not generally as plentiful as eggs of the green apple aphid.

The control of these species will now be considered collectively in conjunction with other spraying work necessary in commercially profitable apple orchards. During the dormant or winter season, many of the eggs of the green apple aphid can be killed by spraying the trees with lime and sulphur solution or with a good concentrated oil spray at the same time the work is done for scale control. In the use of these sprays, however, it is essential for success that the spray be applied in fair weather, and if rain follows within three or four days after spraying the application should be repeated. When the cluster buds begin opening in the spring it is time to do any spraying that is to be applied, if success is expected, for controlling the rosy apple aphid. The greatest part of the injury done to the fruit by this species is caused before the petals fall from the trees. For this work, after the cluster buds open but before blooming, distillate oil emulsion, 3% concentration, can be effectively and safely used, or a combination of whale-oil soap and nicotine such as Black-Leaf "40" may be applied. All apple orchards infested with mildew should be sprayed with atomic sulphur at the same time. The atomic sulphur may be safely and effectively combined at the rate of 12 pounds for each 200 gallons of spray with the distillate oil emulsion or with the nicotine used at this time for aphid control.

As soon as the petals fall from the trees, it is time to spray with arsenate of lead for codling-moth control. Dilute the distillate oil emulsion at the rate of 5 gallons for each 200-gallon tank of spray, adding the four pounds of arsenate of lead paste or two pounds of arsenate of lead powder for codling-moth control. If mildew is present or likely to cause injury, add 12 pounds of atomic sulphur for each 200-gallon tank of the diluted emulsion and arsenate of lead. These three materials can be safely and effectively mixed together in the same spray tank. The distillate oil emulsion used at this time should effectively kill any and all green aphid or rosy apple aphid which may not have been killed by the application before blooming. By the time of the second application of arsenate of lead for codling-moth control, about three weeks after the petals fall, it is likely that many specimens of the woolly apple aphid will be present on the trees. Also at this time it is questionable if the distillate oil emulsion can be safely used as strong as recommended for the earlier applications. Therefore at this

three-weeks' spray use three gallons of concentrated distillate oil emulsion for each 200-gallon tank of spray, and after this has been diluted in water add the arsenate of lead, and, if mildew is present, the atomic sulphur and one pint of Black-Leaf "40" for each 200 gallons of spray. If these directions are followed up to this time, all of the green aphid and rosy apple aphid present should have been killed and mildew under effective control.

At the time of the third application for codling-moth control, the woolly aphid will very likely be most abundant and it is important that the spraying be most carefully and thoroughly applied. Use the distillate oil emulsion, Black-Leaf "40" and arsenate of lead as directed at the time of the second application for codling-moth control. If at this time the woolly aphid is present in large colonies or clusters on the limbs and scarred places of the bark, it will be necessary to hold the nozzles close to the clusters of aphid and apply the spray with sufficient pressure to break up and practically wash off these colonies. Those growers who make a fourth application of arsenate of lead for codling-moth control should by all means use the distillate oil emulsion and Black-Leaf "40" in conjunction with the arsenate of lead if the woolly aphid is present in the orchard. Fruitgrowers must not expect to eliminate woolly aphid by one or two applications in one season. This summer work of combining distillate oil emulsion with arsenate of lead should be practiced for at least three consecutive seasons. In those orchards where the fruit is picked early in the fall a great deal of good can be sometimes accomplished by spraying the trees with a winter spray of oil just as soon as the fruit has been harvested. This would kill any scale insects that might be present and will also, if properly applied, kill all woolly aphid present on the trunks and limbs of the trees before they have migrated to the ground or other trees.

In conclusion I may say that considerable benefit will result from a careful control of these aphids aside from eliminating the injury done directly to the tree, foliage and fruit. The aphid family is undoubtedly the greatest factor in disseminating and scattering fireblight. It is unnecessary to warn you of the injury and loss caused by this disease, but please bear in mind that the spraying schedule previously outlined, if carefully and thoroughly practiced each year, will very materially lessen the spread of blight and greatly reduce the amount of blight cutting now necessary in many orchards because there will be fewer blight infections.

The Oregon State Horticultural Society, the oldest horticultural society in the Northwest, held its thirty-first annual meeting in Hood River, December 11-13. The meeting was well attended. The addresses and discussions were extremely interesting, instructive and valuable.



Herman H. Smidt, R. F. D. 3, Oregon City, Oregon, owner of these trees, read in *Better Fruit* that trees planted in blasted soil would grow faster and be better in every way than trees set in dug holes. He tried it, and on February 14, 1916, wrote as follows:

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Influence of Winter Pruning in Body Building

Professor C. I. Lewis, Chief Division of Horticulture, O. A. C., Before Conference of National Apple Show, Spokane, Wash.

WINTER PRUNING is a strong factor in the handling of a successful commercial orchard. It has much to do with the strength and vigor of trees and can be made to be an aid to fruit bearing.

Let us first consider how trees may be strengthened by winter pruning. One of the first points to consider is maintaining an equal development among the main scaffold branches. A fruitgrower may start with a tree having five main scaffold branches, but by the time the trees are fifteen years of age they may actually only have three, as the other two branches may have become so stunted that they are really only side branches of some of the remaining three. This condition can be avoided if in pruning the trees the orchardist will suppress the stronger branches by pruning them the most and encourage the weaker branches by not pruning them as severely. Thus he will reduce the leaf area of the stronger branches and encourage a larger leaf area on the smaller branches, and this will soon give him a balance and restore the weak branch to its proper place in the tree's framework. The growth which certain sections of the tree will make during the year is correlated quite largely with the leaf area exposed; while severe cutting of the branch might force a longer growth, it

would not give the total area or encourage the diameter as much as would the lighter pruning. In this, of course, we are referring only to the relation of one branch to the other on the tree, and not to the tree as a whole.

Second, the grower should strive to avoid weak forks which are caused by two branches of equal strength issuing from a common point. This weak condition of the tree can be easily avoided by always cutting one branch longer than the other, encouraging one to assume the role of a leader and the other the function of a lateral. Of two competing branches, the one cut the most grows the least.

Again, by an intelligent use of winter pruning one can control to a large degree the proper development of laterals. Spitzenbergs and Ortleys, for example, require heavy heading back, as they often become rangy and produce few laterals, while Yellow Newtowns and Grimes, on the other hand, tend to produce too many, and severe heading only aggravates the condition. Investigations conducted at the Oregon Agricultural College seem to note that winter pruning as compared with summer pruning, on the whole, aids very materially in causing a thickening of the branches and, as we will see later, this has an important bearing on the spur development of a tree.

It is practically recognized by all orchardists that whenever a tree lacks vigor, winter pruning will aid in returning the tree to a vigorous condition. This should be combined, however, with proper maintenance of moisture and soil fertility.

As regards the effect of winter pruning on fruit-bearing development, it results largely by maintaining the vigor of the tree in such a way that it can give rise to strong spurs and buds. The proper heading and thinning out of branches will have much to do with this healthy development. One should study closely the bearing habits of the tree. For example, those varieties which generally do not bear on terminals or on axillary buds, but which develop largely on spurs do not, as a class, tend to be heavy annual bearers. These include such varieties as Arkansas Black, Baldwin, Spitzenberg, Newtown and Rome. How essential it is, therefore, with this class that every encouragement be given to bring about strong spur development, for if we do not, some of these varieties may only bear once in three or four years. Other varieties tend to bear on axillary buds and terminals as well as on spurs, and some tend to bear on very young spurs. These include such well-known varieties as Jonathan, Winesap, Ben Davis,

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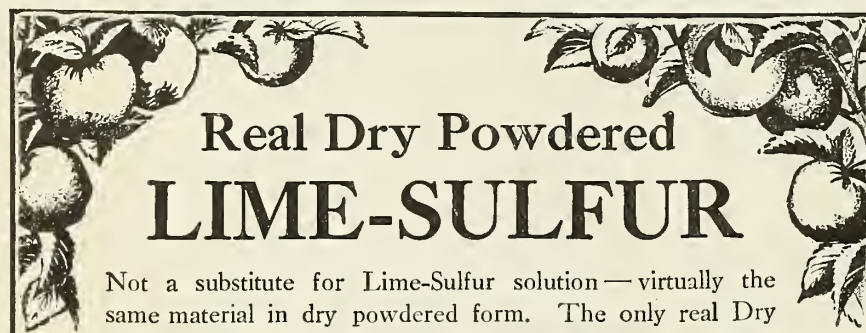


ment of spur and bud, then a moderate heading back would be much superior, since you would cut off a much smaller number of buds and spurs and would not discourage the formation of a large number of new ones which might be true in the heavy heading back. In the same way, heavy thinning out is only a question of mathematics, it removes a much larger number of bearing organs, such as buds and spurs, than would light thinning, and a combination of light heading and thinning will probably generally produce the best results. However, I believe that many of our orchardists tend to head back too severely in the pruning of their trees.

If we combine summer and winter pruning we find they are really supplementary of each other. For example, if the June pruning consists largely of heading back, the winter pruning consists of thinning out and vice versa. Let us consider a few specific instances. We will take first young trees from six to eight years of age which naturally should be coming into heavy bearing. One must avoid over stimulating such trees by heavy pruning. The chances are these trees could be handled the best by a possible heading back in June, followed by a moderate thinning out in winter—or should they be in that condition that a thinning out is desirable in June, then possibly a little more thinning out or moderate heading back in winter would be desirable. In some cases these young trees get in such condition the latter part of July that a little thinning out, or even heading back, is very desirable, allowing more sunlight and air to reach the buds and spurs which would probably encourage them to become stronger, and probably stimulating less secondary growth than may be true with winter pruning.

When trees get to be eight or ten years of age and have never borne good crops, they should be checked as far as tillage, plant foods and irrigation are concerned, and the pruning had better consist of a very light thinning out until the trees reach heavy bearing. One had perhaps better sacrifice a little as regards size and color in the fruit, and bring the trees into bearing, rather than to attempt a type of pruning which might delay bearing entirely for a number of years.

After the trees once reach heavy bearing they will stand much more pruning. Let us consider the great class of trees which most of us are beginning to handle in the Pacific Northwest now—trees which have reached maturity and are in full bearing. With these trees winter pruning becomes to a large extent a thinning process. That is, it aids in reducing the number of specimens a tree might produce so as to encourage desirable commercial size of fruit. We should study these trees so as to keep a balance between the main branches, and we must constantly seek to avoid weak forks which will lead to fatal breakage. We must grasp firmly one principle of pruning in handling these trees, namely, that the greatest response in



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In the winter pruning which you would give young trees which have not as yet much spur development, the growth which occurs any one year varies more with the growth the trees made the previous year than on the amount of pruning. The amount of pruning does not control the amount of growth with such trees. The amount of pruning only determines the nature of the growth, as heavy pruning produces strong sprouts and light pruning

produces weaker sprouts, but more of them, so that the sum total is not changed. However, with mature trees that have much bearing area in the form of spurs, a different result might be obtained.

In pruning trees in the winter the pruning naturally takes the form of either a heading back or a thinning out, or possibly a combination of the two. If one desires simply some strong sprouts, then heavy heading back will produce that result; but if one really desires more fruit develop-

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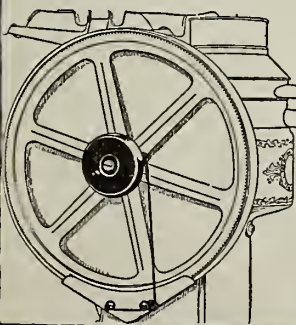
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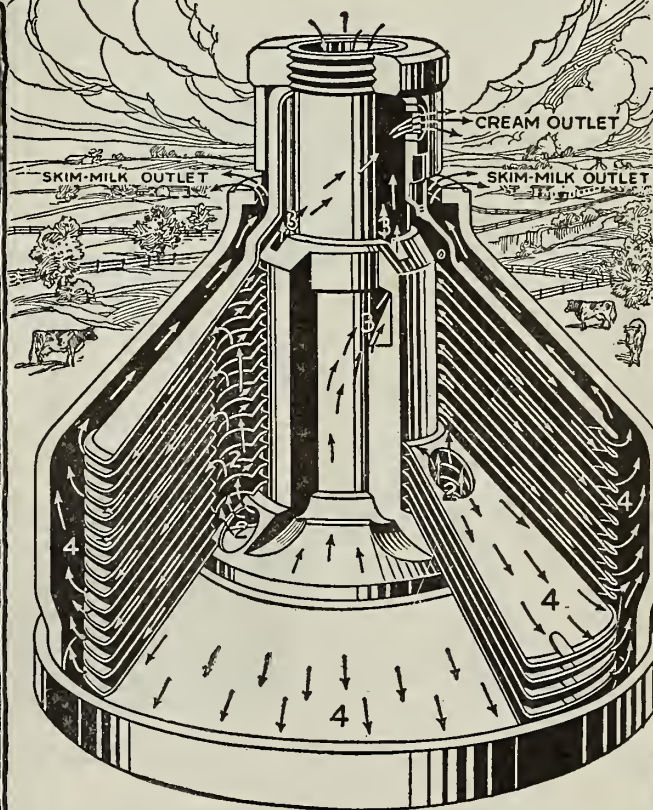
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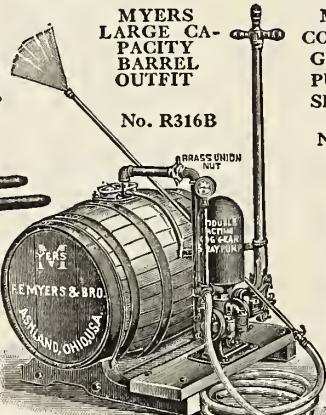
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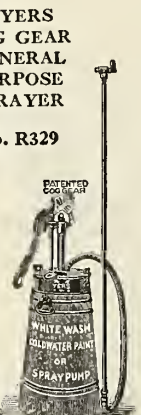
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pruning comes from a region in close proximity to the point where the cut is made. You have all noticed that when large pear trees are dehorned that the response is simply a whole lot of watersprouts just at the point where the branch was cut and that the portions of the tree remote from these wounds is not influenced in any sense. Possibly if it is influenced it is weakened rather than strengthened. If this principle is true, and it is easy to demonstrate that it is, why then the wise method of handling the tree would be to distribute the pruning as generally all over the trees as is consistent, planning that in our system of pruning all parts of the tree will become reinvigorated; perhaps not all in one given year, but certainly within a period of a few years. Every portion of the tree must be reached. If you do not do this, sooner or later, all the fruiting portions of the tree will be at the top and outside.

In our work at the Experiment Station we have demonstrated that where groups of spurs are thinned on pear and prune trees, for example, that it results in a reinvigoration of the surrounding spurs and leads in a few years to the formation of very strong

buds and spurs on the new wood caused by the pruning. By actually reducing the number of spurs in certain portions of the tree we have reinvigorated the remainder, making them more fruitful, causing them to produce better fruit and at the same time laying the foundation for the development of new spurs and buds. In our winter pruning the more we can reach the various parts of the tree the nearer we will be to keeping the trees producing high-grade fruit.

In our work at the Experiment Station we have recently completed a study of spurs and the work shows clearly that the percentage of spurs that bloom decreases as they get older and that the percentage of spurs bearing fruit decreases even faster as they get older. In other words, some spurs may have strength to blossom, but do not have enough reserve energy to mature fruit. Spurs decrease in the amount of fruit for each spur as they become older. The amount of growth that a spur makes for a given season has a close relation to its bearing the following season, and there is also a relation between heavy bearing and length and diameter of spur. Lastly, branches that have a large diameter

have stronger spurs and bear more fruit.

It seems to me that these investigations with spurs indicate very clearly what our method of procedure must be with our heavy-bearing orchards, namely, that we must develop strong spurs and that we must head and thin in such a way that we distribute the stimulus over all parts of the tree, avoiding confining our pruning to two or three parts of the tree. One should attempt to develop a fair amount of new wood annually in order to provide for the necessary increase of new buds and spurs essential to the best tree development.

In preparing this article I have drawn freely from our published investigations as shown in Station Bulletins 130 and 139.

Discussion

Question: Is it desirable to prune in the winter irrespective of temperature?

Professor Lewis: I would not prune at a low temperature, where the wood was frozen. I do not know any one doing work to tell at what temperature you can prune. I remember in 1908 we got a great deal of black heart and personally I felt that the trees having been pruned in a frozen condition had something to do with it.

Question: Are trees in this locality dormant enough to prune now?

Professor Lewis: That would depend somewhat on the nature of the pruning. If they are hardened up thoroughly you might do some thinning out.

Question: Are cuts made in the winter as susceptible to blight infection as those made in the summer?

Professor Lewis: Probably not. Blight at this season is in the dormant form and in the summer it is in the active form. We are finding that it is probable in cutting blight we have got to have a repellent as well as a disinfectant. You can cut a branch and disinfect it, and an insect may come along later and reinfest it unless there is a repellent. One of the biggest problems now is to get a repellent and disinfectant.

Question: Wouldn't the cut made in the winter have an opportunity to dry to prevent infection before the new growth came in the spring?

Professor Lewis: That would be my opinion, but please take that only as an opinion.

Question: Would you thin fruit spurs on trees just coming into bearing?

Professor Lewis: The trees to look out for are the trees that are beginning to go into a decline. In going through the Northwest it is surprising to find how many trees are going into a decline. You who are in your orchards from day to day don't see how your trees are going into this decline. Too many of your blossoms are small and too many are not setting fruit; if you could prevent that condition you would gain a whole lot. In many cases our soil conditions and methods of handling our trees are causing this early decline which we must take strong

Continued on page 28

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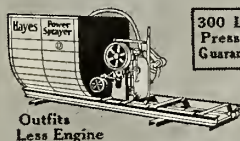
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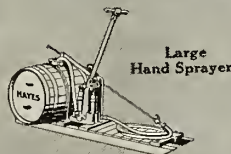
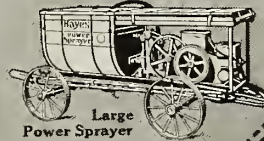
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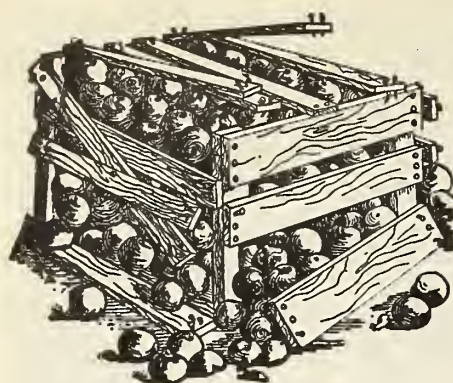
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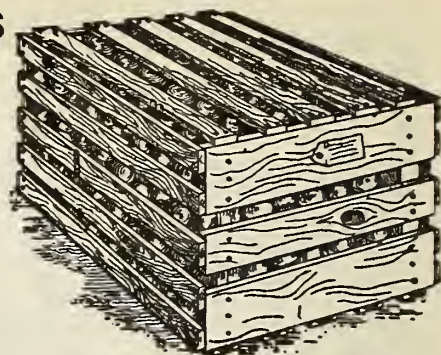
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Influence of Commercial Fertilizer on Bearing Orchards

By Gordon G. Brown, Horticulturist of the Hood River Experiment Station

SOME years ago and to some extent today a very serious yet comparatively simple soil problem forced itself upon the apple growers in various sections of the Hood River Valley. It had to do with vigor of tree and fruit production. Orchards formerly productive to a marked degree gradually began to fail. This was true not only of neglected orchards, of which I am glad to say we have but few, but also of orchards apparently (notice that I place emphasis upon that word) receiving the very best of treatment as judged by the standard practices of the time.

It did not require a person of highly trained horticultural ability to see that something was decidedly wrong. The trees not only showed that they were weak and revitalized, as evidenced by general appearance, but they gave striking proof of that fact in many ways. For example, terminal growth formerly vigorous and productive of fruit spurs was gradually giving way to weaker growths and in many cases was reduced to almost negative proportions. Fruit spurs formerly productive of plump fruit buds were now giving way to buds of an opposite character. The leaves formed were thin, small and sparse, and failing to function early in the summer were numbered with the windfalls. The yellow, almost reddish, appearance of the bark also served to indicate the true run-down condition of the trees, and in typical cases these characteristics could be noted at long distances across the valley, especially in the dormant season. A heavy crop of blossoms, weak in character and subnormal in size frequently appeared, but owing to their lack of vigor were unable to set and carry to full maturity but a small percentage of fruit. Fruit, while possessing good color, showed such high percentages running smaller than 150 to the box as to place it in the secondary market-value class. Coincident with these facts two general outstanding features regarding care predominated. The first was that previously no irrigation had been given; the second that long-continued clean cultivation had been the general rule.

The importance of the former is obvious and I will not deal with it here except to mention in passing that it is the serious intention of the Hood River Experiment Station to make a critical study of this practice under local conditions as soon as it is possible to do so.

Regarding the latter, it is now a rule long since established by agricultural practice the world over that clean culture practiced exclusively tends to destroy the organic matter of the soil. The relation of organic matter, humus, bacterial action, water-holding capacity and good tilth are widely understood. The relation of organic matter also to that all-important element, nitrogen, which makes for tree growth and production is also well understood but often not appreciated in a practical way. The soils in typically run-down orchards differed from that which I have just indicated in a marked way. They lacked water-holding capacity. They baked or puddled easily and on hillsides were much given to erosion. In some cases the organic matter was so badly depleted as to make the introduction of leguminous shade and cover crops such as clover and alfalfa, which depend primarily upon an abundance of moisture a matter of extreme difficulty.

Those in charge of this station in 1914, comprehending the true situation, began a series of co-operative fertilizer experiments in the Pine Grove district. Various brands of commercial fertilizers were used carrying the principal ingredients, phosphoric acid, potash and nitrogen. These were used under different conditions, in different amounts and combinations. A limited amount of barnyard manure was also used. The results to date are so clear and consistent as to point to the unmistakable correctness of the general principles given and show plainly that the mature apple orchard located on a silt soil such as we have here is certainly no exception to the general rule. Owing to the fact that practically no response has been secured from applications of potash or phosphoric acid and that the most consistent and satisfactory results have been secured from

nitrate of soda, I take it that a discussion of the latter work would be of most interest and practical value here.

For this work two typical Spitzenberg orchards about sixteen years of age were chosen. In both orchards four plots were laid out under as nearly uniform conditions as possible. These experiments may be considered duplicates in all respects other than in the amounts of nitrate applied. In orchard No. 1 5.6 pounds per tree formed the basis of the work and in orchard No. 2 6.7. Plots No. 1 in both cases received their fertilizer in the form of crystals broadcasted around the tree. Plots No. 2 in the form of a solution sprayed on the ground around the tree. Plots No. 3 in the form of a solution sprayed both on the tree and on the ground. Plots No. 4, as will be noted from the chart, have never received any fertilizer and will hereafter be referred to as the check. The cost of these application at normal prices, \$60.00 per ton, would amount to approximately \$10.00 per acre in the first case and about \$15.00 in the other.

During the first year the applications by the different methods were not all made at the same time. This fact served one very important purpose. For instance, it was learned that applications made in early March exerted a marked influence beneficially during the entire season on both tree growth and fruit production. On the other hand, the applications made in May failed to exert any appreciable influence until nearly the close of the growing season. Consequently, taking advantage of this information, the second applications were made in early March, 1915.

Now just a word regarding the general care given these orchards to date, because that is an important part of the program. Orchard No. 1 received its first irrigation in 1914. It was clean cultivated in the early season and seeded to clover and a good stand secured. In 1915 this shade crop was pastured by hogs and young cattle. In early spring, 1916, this crop with its manurial content was turned under. Orchard No. 2 was clean cultivated

during the early season of 1914 and later seeded to a mixture of clover and alfalfa. A good stand was also secured in this case. In 1915 this orchard received its first application of irrigation. The orchard is still in sod.

Now I believe I have given sufficient introduction to these experiments and the conditions prevailing to discuss results. Both of these orchards were decidedly unproductive for a number of years. The results show that no matter in what form nitrate of soda is applied that it exerts a marked influence beneficially to the trees in question. If there were any practical differences as between the different methods of application those facts were not established by any of the careful methods of checking up employed. The results were almost immediate. All of the fertilized trees became green and vigorous and yielded heavily, in marked contrast to the unfertilized nearby.

Let us be more specific and discuss yields. The chart shows this clearly and graphically. The yields per tree on a loose-box basis for the three fertilized plots in orchard No. 1 for 1914 are as follows: 4.1, .1, .2 versus .2 for the check. In orchard No. 2 the yields for the fertilized plots run as follows: 1.9, 2.3, 9.8 versus 2.1 boxes for the check. It is admitted that these yields are poor and that the results are somewhat inconsistent, but it must be remembered that both of these orchards were badly run down, that some irregularities with reference to time of application existed during the first year, and further, that no irrigation was given orchard No. 2 for that year. Turn now to 1915. The three fertilized plots in orchard No. 1 give yields per tree as follows: 8.1, 8.5, 6.0 versus .3 of a box for the check. Here we have an average increase of about seven boxes per tree. Next, turn to orchard No. 2 for last year. The fertilized plots give yields as follows: 10.0, 9.9, 10.1 versus only .9 of a box for check, an average increase of about nine boxes per tree, or about 1000%.

Another important feature of this work considers the character of blossoms and the percentages of fruit set. On all the plots receiving nitrate of soda the number borne to the spur was considerably more than on the checks. They were also much larger and more highly colored. The few blossoms appearing on the check plots were not only small in comparison but almost devoid of color. Many of the buds did not open. In both orchards percentages in regard to the set of fruit were taken both in June and again at picking time. Blossoms retaining at least one fruit each were credited with 100% set. With this in mind, turn to orchard No. 2 for 1915. Figures show that the fertilized plots in June retained between 70% and 80% of all their fruit as against only 35% for the check. During the remainder of the growing season these percentages were reduced approximately one-half. However, the ratio I have given you, two to one, remained constant during the entire growing season.

The grower of a fancy Spitzenberg realizes that it is necessary to produce fruit of good size. He appreciates that the trade is willing to make some concessions as far as color is concerned, providing sizes do not run below 138 to 150 to the box. Beyond that point it is necessary to secure about 90% red color in order to pass muster as first-class fruit. With this point in mind let us again turn to orchard No. 2 for 1915. For this work the fruit was graded to three different sizes: 175 to 150 to the box, 112 to 138, and 100 or larger. These may be classed as small, medium and large. It is significant that the check showed as high as 76% of all its fruits running as small or smaller than 150 to the box versus only 18% for the fertilized plots. On the other hand, the fertilized plots returned an average of about 50% large fruit versus only 5% for the check. Here we have two extremes of undesirability. High percentages of small fruit on the one hand and large fruit on the other. However, this last feature is not so serious when it is learned that all of the over-sized and under-colored specimens from the fertilized plots might have been thrown away and still the balance would have been vastly, yes about six or seven to one, in favor of the fertilized plots.

Let us refer briefly to vigor of tree. Here again figures bring out a good, strong contrast. In orchard No. 2 for 1915 there was an abundance of dark green vigorous foliage on all of the fertilized plots in marked contrast to the leaves on the check. Possibly it may be said that leaf development was slightly excessive in order to insure the best color of fruit, but here is the point I wish to show. The fertilized leaves averaged 2.8 inches long, or an increase of 24%. They were also 7% wider. These figures also substantially represent the figures secured in orchard No. 1 for the same year and also for orchard No. 2 for 1916.

Again, notice terminal growth. The chart shows the growth in inches on an annual basis for 1914 and 1915. It shows unmistakably which way the wind is blowing. These figures are important as they indicate quite closely the general vigor of tree. The figures for the fertilized plots for orchard No. 1 are as follows: 15.2, 11.4, 12.9 inches, respectively, versus only 6.9 inches for the check. In orchard No. 2 the figures run as follows: 8.4, 10.3, 10.9 inches versus only 6.6 for the check. An average growth of from ten to fifteen inches under these circumstances is admittedly good.

I believe that we may now well turn to results for 1916. Recall again, please, that no fertilizer was applied this year. We have seen what the influence of this fertilizer is. It is also apparent that during the past two years it has been applied sufficiently often and in as large amounts as we may safely do so. The question uppermost in our minds this year was: How long may the beneficial effects noted for the first two years be expected to last? Here

Continued on page 26

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The Ninety-Day Cold-Storage Bill on Apples.—A cold-storage bill has been introduced in Congress, known as Bill H. R. 18444, which would make it unlawful to store apples for a longer period than ninety days. Every fruit-grower, every shipping concern and everyone interested in the fruit industry, should sit up and take notice; get in touch with their respective Congressmen and Senators in each state, indicating to them just how this bill would be a menace to them in the Northwest and a hardship on the entire consuming public of the United States. Everybody that is interested in the fruit business in the Northwest should get busy and bring whatever influence and argument they can to bear on Congress in order that it may thoroughly understand this bill and the evil effect that would result. Because it is a reasonable assumption that if Congress thoroughly understands the effect of this bill on the apple industry and the consuming public, it certainly will not pass it. If apples cannot be placed on cold storage for a period of longer than ninety days it would mean that the balance of the crop which is unsold at harvest time, in the month of October, would have to be placed on cold storage in October and it would be unlawful for it to remain on cold storage after January. Consequently the crop of apples of the United States would have to be consumed, if people wanted it in prime condition, in about four months instead of seven or eight months. In other words, it would crowd the consumption of the entire crop into three or four months, which ordinarily occupies a period of seven or eight months. The result would be an immense supply of apples for half the season and practically no apples of good quality the other half of the season, a condition that would affect both the grower and the consumer very seriously. Apples when placed on cold storage remain at

a temperature of 32 degrees. It affects the condition or quality of apples in no way, simply arresting maturity. Winter apples in cold storage in prime condition will keep with comparatively small loss, commercially, for a period of six months. Apples placed in ordinary storage lose their flavor, aroma, spiciness and juiciness in sixty to ninety days, some varieties less. The only way this can be retained during the entire consuming period of winter months is by cold storage. Every fruitgrower knows this. The editor of "Better Fruit" placed eight boxes of Spitzenbergs and Newtowns on cold storage in the cold storage plant of the Hood River Apple Growers' Association about the first of November, 1915. Six boxes of these were taken out of cold storage and consumed during the months of March, April, May and June, being in absolutely first-class condition, without any commercial loss. Some of the Newtowns are still on cold storage in good condition, having been there for a year and three months.

The Pacific Northwest Tourist Association, recently formed, is an organization having for its object publicity of attractions to tourists throughout the Northwestern country. It is a well-known fact that many scenic attractions of the Northwest are unsurpassed, if equaled, by any other spot in the world. It is a well-known fact that California makes about as much money on tourist travel as it does from some of the biggest industries in the state. The object of the Pacific Northwest Tourist Association is to bring tourists from the East by the way of the Northwest. Already differentials in round trips, which in the past have prevented tourists traveling through the Northwest, have been overcome. With everyone working to assist the Pacific Northwest Tourist Association a large volume of traffic can be brought to the Northwest, from which everybody will profit. The Pacific Northwest Tourist Association is entitled to the support of everybody, publicly and privately.

Pruning.—The season is at hand when every fruitgrower should look to his winter pruning. Too many fruit-growers after harvesting feel justified in taking a rest, and when they get the habit of taking a rest they put off from day to day the winter pruning, until spring is near at hand, when other work commands their attention, consequently pruning has to go over until the next year. Pruning is a mighty important part of the orchard industry and should be done regularly and systematically, and not severely at any one time. A good pruning shears is an important matter with the fruitgrower who wants to do a good job and make clean cuts. Clean cuts are the only ones which heal over quickly, consequently the orchardist should supply himself with the best type of shears on the market, of which there are a number which can usually be found at the hardware or implement store.

1916 Prices.—The Bureau of Crop Estimates, Washington, D. C., issued on December 15th some very interesting data in reference to the apple crop. The crop in 1915 was 76,670,000 barrels of apples; the crop of 1916 67,695,000 barrels, about 15 per cent less of a crop. The value of barreled apples in 1915 was placed by the government at \$2.07 per barrel, and in 1916 at \$2.75 per barrel. In other words, barrel apples have 36 per cent higher value this year than last year. Business is better throughout the United States in general. Money is plentiful. The quality of apples in most of the Eastern States was below normal, poorer than last year. Nevertheless prices of barrel apples are higher. The strange fact in connection with these states is that box apples of the Northwest, which are better in quality this year than last and more perfectly graded, are selling for less money than they sold for last year. This subject merits investigation. The editor has some ideas on this subject, which will appear in future editions of "Better Fruit," but in this issue the editor would like to ask the growers, Why? "Better Fruit" would be pleased to receive letters upon this subject from any of the growers, selling concerns, associations, private shipping firms or selling. There must be a reason. What is that reason? "Better Fruit" wants information for the benefit of the apple growers. Upon receipt of the various opinions,—and it is hoped the growers, salesmen, etc., will write "Better Fruit" their opinions in reference to this matter, which is of serious importance,—"Better Fruit" will endeavor to analyze the situation and present results in as able a manner as possible for the benefit of the industry, without mentioning the names of the writers of any of the letters.

Gophers.—The gopher, forever in the past and probably forever in the future, will continue to be a pest and menace to the fruitgrower. In young trees frequently the gopher gets the whole tree. In old trees they frequently injure the green around the roots, which affects the bearing capacity of the tree. Gophers are particularly bad in orchards sown to cover crops like clover and alfalfa. This pest is something every fruitgrower should look after early in the spring, as they usually begin their work along about March or April. There are a number of good ways of getting rid of gophers. Many poisons are on the market which are very effective, and also some excellent traps which are sure to catch them.

Ornamentals, Evergreens.—There is nothing that adds so much to the attraction of the fruitgrowers' home or tends to make life pleasanter or more attractive for the wife and children than a nice lawn, properly set with ornamentals, particularly evergreens, which are beautiful all during the winter. A nice lawn around the house is an important factor in giving value to the place if the fruitgrower should want to sell.

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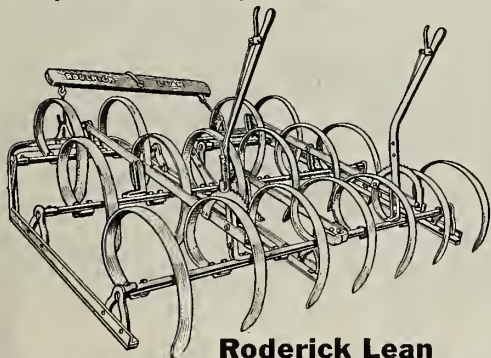
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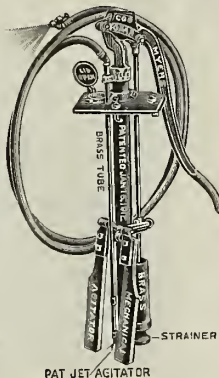
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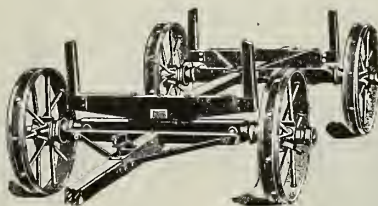
Nothing new or startling about the Lean line spring tooth harrows except that they are built of just a little better material and in a superior manner to anything of the kind on the market at the price.



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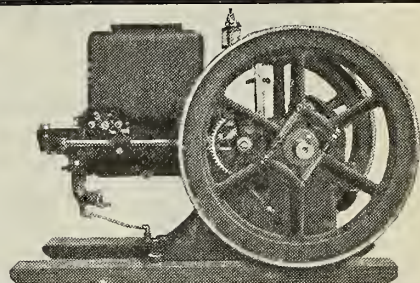
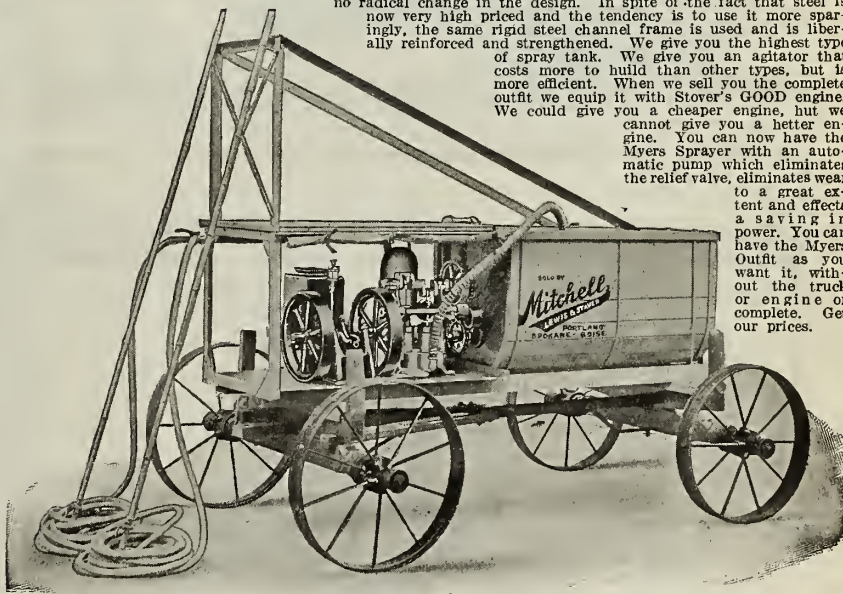
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The word MYERS is the difference between the line of spray pumps we carry and others, and this difference is the reason why we enjoy the largest spray pump business on the Coast. We also carry by far the largest stock and have nearly the complete line of Myers Spray Pumps on hand at all times. Most good hardware stores sell the Myers Pumps.



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Since the introduction of the Myers Power Sprayer there has been no radical change in the design. In spite of the fact that steel is now very high priced and the tendency is to use it more sparingly, the same rigid steel channel frame is used and is liberally reinforced and strengthened. We give you the highest type of spray tank. We give you an agitator that costs more to build than other types, but is more efficient. When we sell you the complete outfit we equip it with Stover's GOOD engine. We could give you a cheaper engine, but we cannot give you a better engine. You can now have the Myers Sprayer with an automatic pump which eliminates the relief valve, eliminates wear to a great extent and effects a saving in power. You can have the Myers Outfit as you want it, without the truck or engine or complete. Get our prices.



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Spraying requires a power that is dependable. There is no service that makes such severe demands on an engine as does spraying. You want an engine that you can forget, so that all of your attention can be upon the work in hand. This engine is the Stover, the quality engine, the lifetime engine. We have this engine built in special sizes for spraying. Booklet sent upon request.

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We have stocked some low wheeled, short turn orchard trucks that are light draft and at the same time are substantial enough to stand the heaviest work. These trucks are to other trucks what the Mitchell Wagon is to other wagons. There is no comparison.

**Farm Machinery
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Pumps
Mitchell Wagons**

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Agents Everywhere**



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Time is the test of a tractor:

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Years of Caterpillar building—years of steam tractor building experience before that—have made Holt the world's best-known tractor manufacturer.

Thousands of owners in thirty countries testify to the length of the Caterpillar's life and service.

Lowest cost per working hour through continual operation and freedom from repairs is the secret of the Caterpillar's success.

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There's but one Caterpillar—Holt builds it

Spray Equipment.—Experience in fruit growing, particularly apple growing, during the last two years, on account of the prevalence of codling moth and various other pests and diseases, has convinced the apple grower that, in addition to using the right spray material in the right way at the right time, it is absolutely necessary to have first-class equipment in the way of spray outfits in order to accomplish satisfactory results. Every mechanic knows better than to try to do a good job with poor tools. Every fruitgrower should have a first-class spray outfit for spraying. There are a number of good makes on the market. Every fruitgrower should give the matter prompt consideration and decide what kind of an outfit he is going to purchase and make the necessary arrangements for delivery.

Merchants' Week in Portland, February 19 to 24, will be the Eleventh Annual Convention of the Oregon Retail Merchants' Association. The object of this convention being to bring together jobbers, retailers and sales managers from all over the Northwest with a view to discussing and formulating plans that will stimulate the development of the Northwest and increase the volume of business being done, opening up a way for a larger sale of products of the Northwest.

The Fancher Creek Nursery Company, Fresno, California, announces they are sending out their new illustrated price catalog. This firm usually issues a very interesting catalog with considerable information to the fruitgrowers, as well as many specialty fruits which are grown in California and that can be grown in the Northwest.

Power Drag Saw does the Work of 10 Men



WEIGHT
285 lbs.

Price
Complete 148.⁰⁰

One man can move machine from, cut to cut on log. Two men can carry it. Cuts through 3½ foot log in three minutes. Approximately 25 cords a day. 34 H. P. gasoline engine warranted. Steel wheel cart \$8.00. Send for catalogue.

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Spraying.—The spraying season will soon be at hand for the early pests and diseases. The first pests and diseases on the program are aphids, scab, and San Jose scale. Spraying for San Jose scale is usually done when the buds begin to swell; spraying for aphids about the time the buds are ready to burst. Spraying for scab should commence with the semi-dormant spray, which is when the buds begin to burst and show small green leaflets. Spraying for these pests and diseases usually commences in March. This edition contains an interesting article on spraying for aphids; the March edition will contain information about spraying for scab and San Jose scale.

The Cow and the Hog.—"Better Fruit" has published a number of articles in previous editions in reference to the cow and the hog in connection with orcharding. Now that fruitgrowers have found that through continued cultivation they have depleted the soil of humus and nitrogen, and have found further that this can be supplied with cover crops, the way is open for the fruitgrower to make some extra money without extra expense by seeding his orchard to cover crops, sowing alfalfa or clover and maintaining a few dairy cows or a drove of hogs. A number of fruitgrowers who have done this are making some extra money, which comes in handy throughout the year.

The Spray That Sticks



ADHESO

REG. U.S. PAT. OFF.

Insecticide, Tonic Fungicide

"ADHESO" HAS PROVED UP IN THE WEST

G. I. Aiken, Placerville, Cal., writes: "I have Winesap trees that for the last ten years have been so Scabby that I was thinking seriously of digging them out. However, I decided to try once more, this time using your 'ADHESO,' and the result was that I had over 99% clean fruit."

Mr. Aiken has re-ordered.

The Wonderful Apple Crop of W. D. Shoupe, written about in the November 15 issue of "The Fruit Grower," was sprayed with 1800 lbs. of "ADHESO." Mr. Shoupe has ordered 1800 lbs. for 1917 for his Sandoval, Ill., orchard. The Largest Apple Crop Ever Grown by a Single Grower was sprayed with our "Triangle" Brand Arsenate of Lead. John W. Miller, Martinsburg, W. Va., grew this year 45,000 barrels, valued at \$150,000. All Sprayed with Our Sprays. Mr. Miller has placed his entire order with us for 1917.

Ansbacher Insecticide Co. Inc.

527 Fifth Avenue, NEW YORK

"BEAN" POWER SPRAYERS

"USED ROUND THE WORLD"



Spraying Lemons Near Santa Paula, California.



Spraying Grapes in New York State.



Spraying Grapefruit in the Atwood Groves, Florida.



A Bean at Hawkesbury Agricultural College, Australia.

In the orange-growing sections of the Transvaal, South Africa—in the lemon groves of Southern California—in the vineyards and fruit-growing sections of old New York State—in the grapefruit groves of Florida—in the orchards of Australia—wherever fruit is grown and spraying is required there you will find the Bean at work. Bean outfits are

Noted for Downright Dependability

There are 30 years of experience back of the Bean line—30 years of steady improvement and constant betterment. They have many distinctive, important advantages—many of them found on no other outfits. We call your attention especially to the following:

BEAN PATENTED AUTOMATIC PRESSURE REGULATOR—which ends all safety-valve troubles. Absolutely safe and certain. When nozzles are shut off, the liquid is simply pumped back into the tank, without being put under pressure. Saves fuel and much wear and tear on engine and pump.

BEAN PATENTED THREADLESS BALL VALVES WITH REVERSIBLE SEATS—Simply bell metal balls which cannot stick, corrode, or give trouble. Reached in two minutes without stopping engine and withdrawing liquid.

PORCELAIN-LINED CYLINDERS—cannot be injured by any liquid.

NO STUFFING BOX—hence the source of much sprayer trouble is entirely eliminated.

UNDERNEATH SUCTION—which greatly increases capacity; never requires priming; and makes it possible to empty tank in a few seconds.

BEAN REFILLER—Fills 200-gallon tank in five minutes.

ECCENTRICS INSTEAD OF CRANKS—More durable than cranks and wear can be easily taken up.

BEAN ROCKING BOLSTER—Wheel on either axle can be in rut without tipping tank or springing frame.

DIRECT CONNECTED ENGINE AND PUMP—Saves power. Pump and engine are bolted direct to steel frame, giving perfect rigidity. Frame is bolted direct to axle, saving 6 inches in height and 150 pounds in weight.

INTERCHANGEABLE PARTS—All parts can be quickly and economically substituted for those that become worn.

NOVO ENGINE—The simplest, sturdiest, most efficient little engine on the market, and unsurpassed for sprayer use.

Made in All Sizes

We make a complete line of Power Sprayers at from \$100.00 up—as well as Hand and Barrel Pumps, Nozzles, Hose and all Pump Accessories.

Our new catalog describes the entire line and explains fully the new 1917 improvements. Send the coupon.

Immediate Deliveries from Stocks at Many Northwest Points

Bean Spray Pump Co.

12 Hosmer Street
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Bean Spray Pump Co.,
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Gentlemen: Please send me your 1917 Catalog of Hand and Power Sprayers. I have.....acres of.....trees, and am interested in Hand Pumps..... Power Sprayers..... Accessories.....

Name

Address

The Satisfactory Vegetable Garden on the Fruit Farm

By A. G. B. Bouquet, Division of Horticulture, Section of Vegetable Gardening, Oregon Agricultural College

WITH the hurry and scurry of every-day activities on the fruit farm, the vegetable garden, as a legitimate part of the farm, very often suffers from lack of attention, or in many cases it is entirely an unknown quantity. In still other cases it has fallen to the lot of the housewife to also do a large part of the vegetable gardening, in her attempt to produce some fresh produce that she can prepare for the table for the hard-working fruitgrower. It seems almost unnecessary to emphasize that this is somewhat of an unreasonable proposition in view of the amount of work that the average housewife on the farm must necessarily do from day to day.

It has always been my impression, gained by observation and experience, that the average farmer realizes to a small degree the producing power and money value of a small area of land cultivated to vegetables. Indeed, on a great many farms it is the last part of the farm that receives attention, the farmer laboring under the idea, presumably, that either the vegetables will grow anyway without very much care or that there was not enough return made in the time invested in the care of the same.

I well remember a few years ago my first attempt to interest and influence

the average Hood River Valley farmer and fruitgrower in the value of the garden area. These attempts seemed to be crude and rather wasted on the desert air, but succeeding years have shown, I believe, that at least some of the seed may have taken root and while not producing a hundredfold, have provided some examples which were later to influence others. It is not so very long ago since the situation was when many of these fruitgrowers in this section as well as in others were purchasing in liberal quantities their every-day necessities, among them many vegetables. Not a few crates of the most common kind of vegetable produce found their way down this valley and other valleys to be finally disposed of to some farmer.

My impression is that this condition has somewhat changed at the present time, and I am led to believe so partly by the increased interest taken in some of the meetings at which I have spoken, and the statements made to me by a goodly number of folk who have related to me their successful experiences, as well as their difficulties in the farming of their vegetable lands. Others, possibly, have made feeble efforts and have had very little success. These are often ready to condemn the feasibility and value of the garden area, offering as an excuse that it does not pay to cultivate the land to these kind of crops. It should not, however, take very many years to convert these people to the true light of conditions.

I believe that no farmer can afford to so specialize or be so wrapped up in one crop or another that he neglects to produce some of the daily necessities of life. For economy and health he should have a vegetable garden, and a satisfactory one, which returns to him a profitable interest on his time, labor, and money invested. That is the problem, and the basis of my discussion.

Many vegetable garden areas on the farm are too large. They cover too much ground, and one has to cultivate and attend to an undue amount of soil. I would suggest no larger an area, outside of the potato acreage, than a plot one hundred by one hundred and fifty, or even fifty by one hundred and fifty, laid out for horse cultivation, so that there is the greatest economy in the working of the land.

Many gardens begin to be failures almost before they are started, because they are attacked suddenly, on the spur of the moment, without any plan, or much forethought. A farmer should have a plan of work and then work his plan. It doesn't have to be elaborate or intricate, but it is a guide to operations, and I assure you it is as good and as valuable as an architect's plan in building a house. The Oregon Agricultural College would be glad to submit to farmers suggestive plans for their home vegetable garden. By writing to the Department of Vegetable

Gardening these may be obtained. I have seen hundreds of home gardens with altogether too much of one variety planted, and not enough of another. Similarly, there are many gardens where this or that vegetable runs out, and there is a situation of too much at one time and nothing at another time. This can be very largely avoided by planning the plantings and making them timely and opportune.

I recommend a wider variety of crops to be grown in the farm garden, without necessarily entailing much added labor or expense. By this I wish to encourage a larger variety and a more satisfactory variety of vegetables produced and eaten. Variety is the spice of life, and no farmer should be without some of the more delicious vegetables that the city folks have that can be produced at least on the average farm. In this connection we would do well to pay more attention to vegetables and their adaptability to seasons of the year. By this I mean that it is entirely possible to lengthen the production and the value of the garden by planting crops for the fall season, the winter season, and for early spring. Such vegetables as Swiss chard, Scotch kale, brussels sprouts, spinach, broccoli, Danish cabbage, and head lettuce, ought to be grown more, for these are

GOOD SEEDS

Ten of the Finest Vegetables

For 25c

We will mail one large packet each of the following Vegetables in a coupon envelope. This coupon will be good for 25c worth of seeds selected from our Catalogue on any other order for 75c worth of seeds.

Bradley's Earliest Radish; crisp and brittle.
Bradley's Early Egyptian Turnip Beet; blood red.
Bradley's Earliest of All Lettuce; very crisp.
Bradley's Imp. Early Jersey Wakefield Cabbage.
Bradley's Earliest of All Blood Red Tomato.
Bradley's Best Extra Early Sweet Corn; delicious.
Bradley's Perfection Long White Spine Cucumber.
Bradley's Mammoth Yellow Pzizetaker Onion.
N. Y. Improved Spineless Egg Plant.
Improved Mammoth Ruby King Sweet Pepper.

25c buys all the above and in addition we will send one large packet "SPENCER SWEET PEAS," a mixture of 10 varieties; regular price 15c.

Big Illustrated Catalogue FREE.

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requires no bookkeeping knowledge, simple and comprehensive. Endorsed by bankers, colleges and practical farmers. Complete set loose-leaf business forms for all types of farming, including dairy, breeding, spraying, pedigree, poultry, etc., records. State kind of farm or orchard. Ask for particulars. **TWEEDS SYSTEM CO.,** Pacific Block, Seattle, Wash.

Walnut Growers, Attention!

A fine stock of **Franquettes (Vrooman Strain)** and also **Mayettes (Latest Improved)** grafted on **California Black Walnut**.

Prices on application.

TABLE GROVE NURSERIES, Healdsburg, Cal.

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Experienced in developing and handling large tracts of fruit, agriculture, stock, desires location—salary or percentage. W. R., care "Better Fruit."

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desires to secure the services of a working foreman to take charge of its nurseries and orchards beginning March 1st, 1917. APPLICANTS MUST BE EXPERIENCED IN ALL LINES OF NURSERY PROPAGATING AND FIELD WORK. A good opportunity for the right man. A new modern cottage ready for the successful applicant. Apply at once.

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Position as Orchard Superintendent. Scientific knowledge of the fruit industry. Practical experience in the best fruit district in all phases of fruit growing, pruning large orchards and packing experience, superintending the packing of 20,000 boxes. Complete particulars and testimonials furnished.

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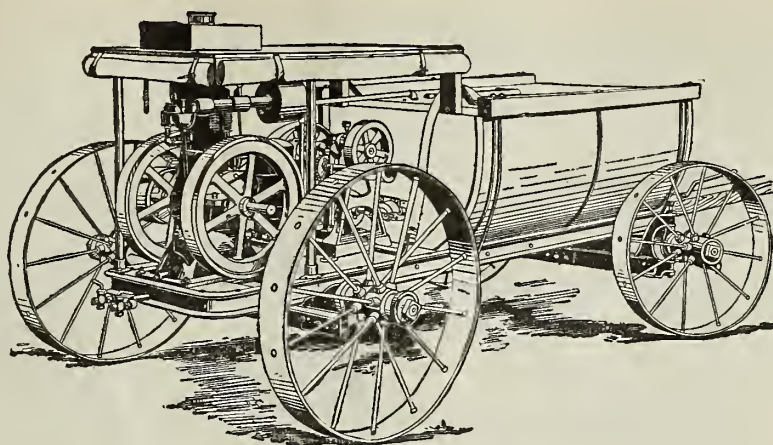
A married man, now with Washington State Department of Agriculture, a thoroughly practical orchard man, who can put the balance on the credit side of the ledger, wants to take charge of an orchard. Will consider part salary and part percentage of net receipts. I offer the best and expect the same.

Address L. A., care of BETTER FRUIT.

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for several hundred acres bearing orchard, who understands irrigating, growing, harvesting and packing. Must be intelligent and able to get efficient service from orchard crew. Good job and splendid future for right man. Address P. O. Box No. 238, North Yakima, Washington.

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The Hardie Hillside Triplex

Combines in one smoothly running powerful machine all that the most exacting fruit raiser demands in adaptability to any orchard condition—pressure, pump capacity and economy of operation.

The special all steel underslung truck goes anywhere. Side hills and bad soil conditions are conquered. Its rocking bolster and low center of gravity keeping an even load on rough ground. Closely set orchards are thoroughly and quickly sprayed without usual damage to fruit or trees. Its powerful well balanced engine, built with the same skillful accurate workmanship as an automobile, provides an ever ready source of power, one which is always on the job, willing and sturdy, yet so well designed and constructed that its fuel consumption is the lowest.

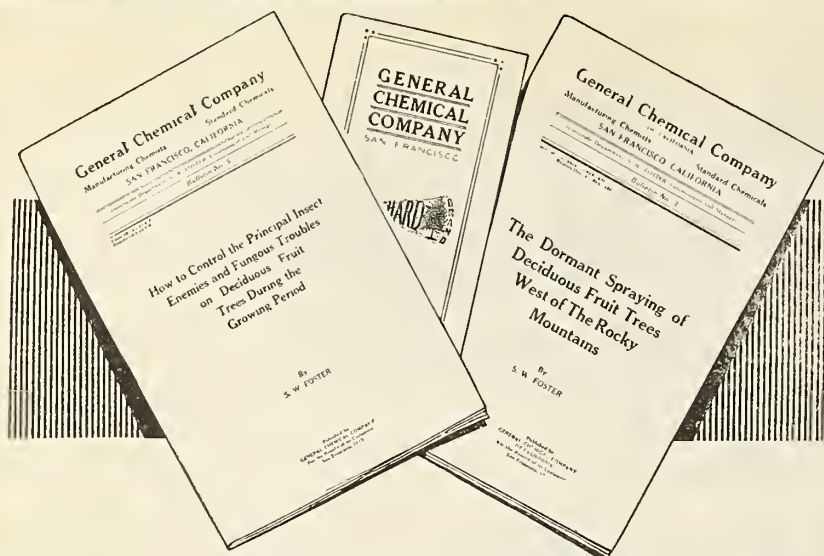
The Hardie Triplex pump, with its frictionless plungers and threadless valves, makes speedy high pressure work easy, yet so simply designed and constructed that anyone can run it with a certainty of good success. Equipped with a pressure regulator holding the pressure right to the dot which acts like lightning when the nozzles are turned off or on. When the nozzles are turned off it securely locks the pressure in the air chamber while at the same time all the load is taken off of the pump and engine.

Viewed from every angle of reliability, ease of manipulation, long life and clean cut economical spraying the Hardie Hillside Triplex has no equal.

Equipment such as this, time-proven, certain and sure, without any of the uncertainty of experiment on your part, puts your spraying on a sound substantial basis.

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Give you the latest scientific information regarding

ORCHARD PESTS AND DISEASES

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Orchard Brand Arsenate of Lead Orchard Brand Atomic Sulphur

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Our Bureau of Research is ready to help you at any time.

If you have any orchard diseases or pests write to Mr. Foster, giving him a full description of the conditions and he will tell you what to use and how to use it.

Orchard Brand products can be obtained from the following:

GILBERT & DEWITT, Hood River, Oregon.	MORGON, McKAIG & CO., North Yakima, Washington.
BALFOUR, GUTHRIE & CO., Portland, Oregon.	WELLS & WADE, Wenatchee, Washington.
C. J. SINSEL, Boise, Idaho.	SAMUEL LONEY & CO., Walla Walla, Washington.
ROGUE RIVER CO-OPERATIVE FRUIT GROWERS' ASSOC., Medford, Oregon.	McGOWAN BROTHERS HARD- WARE CO., Spokane, Washington.

Mail the Coupon to Dept. F-3

General Chemical Company, San Francisco, California

Insecticide Department, General Chemical Company,
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Please send me free bulletins regarding the control of orchard pests and diseases. I have

.....acres apples acres pears acres apricots acres almonds
.....acres peaches acres prunes acres cherries acres grapes

Name.....

Address.....

all hardy vegetables and mature at a time when other goods are gone. Too many gardens are over by the time the first cold snap appears.

I recommend also a careful and discrete choice of varieties of each vegetable. Our seed catalogs are loaded with the same, but the wise gardener picks the best stuff from experience or suggestion, the choice being made on the basis of quality, adaptability to season, and maturity. To illustrate, for a hardy fall and winter head lettuce, New York is the best. It is not so adaptable in the summer time. There should be at least two or three varieties of sweet corn planted, some for early, some for mid-season, and some for late. For instance, Portland Market for early, Golden Bantam for second early, and Howling Mob to be planted for the later season. Successional plantings of these various varieties would no doubt suffice. My best corn this year was planted July 6th to the 12th, and was in fine condition toward the middle of September. The proper choice of varieties of every vegetable makes a big difference in the success or failure of the home vegetable garden.

Satisfactory vegetable gardens are never grown from indiscriminately bought seed. On the contrary, it pays to get the best, of the highest quality. This should be ordered early in January, before stocks begin to get low, and possible substitutions are made. Ordinarily, I do not think it is necessary for any gardener to get "stung," so to speak, on his seed purchasing, unless he buys with his eyes shut, and with but little care. Acclimated Oregon vegetable seed is a big factor in our gardening, and will be more so in successive years. Keep your money in the state and patronize home industry. Don't send it to the Middle West or East unless you have to. There is a lot of good vegetable seed grown here in the state, and offered for sale by our seedsmen. I think that the fruitgrowers should be encouraged to practice more than they do the purchasing of Oregon-grown seed.

One of the essential features of a satisfactory garden is the equipment, which is efficient, but not expensive, of some glass sashes, a wooden frame, some horse manure, providing a temperature of 120 to 140 degrees Fahrenheit, and some dry straw or burlap, in which to produce in the spring the young vegetables for later setting in the garden; also in which to have head lettuce and radishes growing out of season months of the year; also in which to force a little early rhubarb, possibly; in which also to grow melons, eggplants, and peppers in districts where these otherwise might fail to mature. All this could be purchased for the sum of \$7.50 or \$8.00, and it would last ten years or more. The average farmer makes little use of the hotbed or the cold frame, and this is the essential feature of our home gardens, at least in the Willamette Valley, that is lacking for want of the knowledge of the value and use of the same

by the average farmer. There are but few Thanksgivings and Christmases that I do not cut a few heads of New York Lettuce grown in the frames for my dinner, while other folks are spending picture-show money for theirs. In districts such as the Hood River Valley, where in some parts the growing season is not long, and the average daily and night temperature is not high, a great deal of value for plant and crop protection is the small forcing hill, or individual cold frame. There are many styles of these that can be used, but they all have the same principle and use. Place these at night over your tomato plants, your eggplants, your pepper plants, your melon and cucumber hills, and your garden will not succumb to the unusual cold nights. Considerable use of these is made by gardeners in the vicinity of The Dalles, for plant protection, as a means of increasing the earliness of their crops. It will be necessary also in this district to use added protection in the form of straw mats or dry straw, or old carpet material, in order to keep the cold from penetrating the glass sash.

The perennial vegetables, such as asparagus and rhubarb, are important in the home garden, because they are early, easily cared for, and permanent. Fifty to seventy-five plants of asparagus, and ten to twenty rhubarb plants, will furnish a sufficiency for the average family.

One of the most widely-eaten vegetables is head lettuce. It is likewise found but little in the average home

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Phone, 'call or write John M. Scott, Gen. Pass. Agt., Portland, Ore.



garden during the entire season. Lettuce that is solid, sweet, and tender, can be grown in most sections of the state, and in many sections nine and ten months out of the year. Success in growing this vegetable depends upon the right selection of varieties, timely applications of water, and plenty of manure in the soil. The average farmer can also have a good supply of lettuce grown in the cold frames during the late fall and early winter, and also in the early spring before the outdoor crop begins to head.

The equipment of four glass sashes in a cold frame, together with the lumber of the frame itself, can be paid for by growing one crop of lettuce under these sashes. In a frame 12 feet long and 6 feet wide, 144 lettuce plants can be planted. These should sell at least at 50 cents a dozen, which would make a total of \$6.00, which would go quite a long ways toward paying for the original cost of the equipment. There should be no need for the fruitgrower to buy his Thanksgiving celery, and oftentimes his Christmas celery. He can grow it out of doors, partially blanch it, and when cold weather comes, store it in the barn or shed which is reasonably frost-proof. This is especially possible in districts where the falls are cool and where there is not so much moisture as there is in the western part of Oregon.

Storage is a feature of vegetable gardening that is very important. Various vegetables can be successfully stored for winter use, such as cabbage, celery, roots of all kinds, squash, pumpkins, and onions, and these, together with the canned products, which are usually put up, such as string beans, tomatoes, asparagus, sweet corn, etc., should make things decidedly easier for the cooks during the winter time, and furnish a more pleasant variety for the farmer.

I fully realize the difficulties in vegetable gardening, in endeavoring to con-

trol insects and diseases. Yet at the same time there are many of these that can be controlled by a discrete use of the right measures at the correct time. It is unnecessary for a gardener to lose a number of his plants from injury by a certain insect, while others are relatively more difficult to successfully control. Truck gardeners, as well as fruitgrowers who are growing vegetables, can always obtain some very helpful information by writing to the Department of Entomology of the Oregon Agricultural College.

In regard to the fertilization of the home vegetable garden area, I would say that it would pay you to save from your own stock, your horses or cows, enough manure so that you can put on 250 pounds per square rod of garden area. If this is impossible, use 20 pounds of lime, or one-half that amount of land plaster, and five pounds of complete commercial fertilizer to the same area.

There are many other important factors of successful vegetable gardening that I might emphasize. One of these is the necessity of some regular or systematic time being devoted to the vegetable garden. If this part of the farm is given its due care, it will show a greater balance of net receipts for the given amount of area cultivated than almost any other part of the farm which is tilled.

Space and time forbid my going into details to any further extent. I would like, before closing, however, to emphasize to the fruitgrowers and members of the society here present that the Vegetable Gardening Section of the Division of Horticulture of the Oregon Agricultural College is anxious to serve the fruitgrowers of the state as far as possible by assisting them in the cultivation of their areas devoted to vegetable gardening. Any communication I receive will be very carefully considered and as much assistance as possible rendered.

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Get our prices before planting this spring.

Largest stock in the Northwest.

All grown on virgin soil.

Everything in fruit trees and a full line of

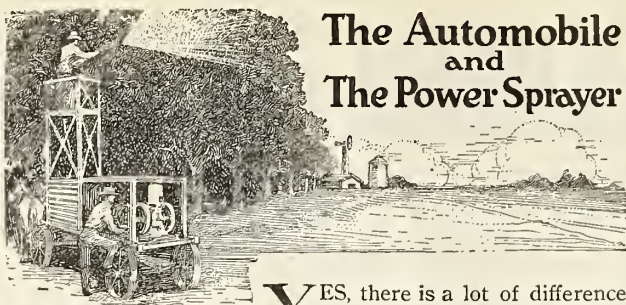
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YES, there is a lot of difference, but the engine of the sprayer should be as carefully considered as the motor of your auto.

The engine of the sprayer must deliver steady, unflinching power as the machine moves along over rough spots, on hillsides, across ruts.

Novo Engines deliver such power.

They are standard on leading power sprayers. They have been adopted by 80% of the concrete mixer firms of the country. Contractors find them the handiest, stendiest, most economical source of reliable power.

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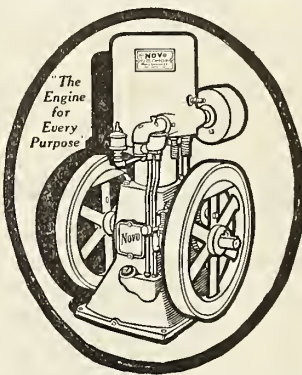
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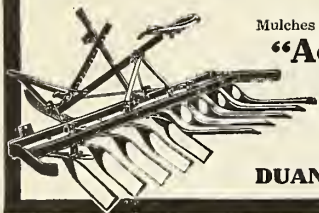
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WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

Influence Commercial Fertilizers

Continued from page 17

we have a quick-acting fertilizer, and owing to its greatly soluble nature it is assumed that none of that applied in 1914 or 1915 would hold over in the soil to influence the action of the soil for 1916. It was also assumed that owing to the greatly improved physical condition of the fertilized trees that the beneficial effects would be lasting for some time, and what we wished to determine was to what extent this might be so.

In this respect we were not in the slightest disappointed. All of the fertilized trees came up to our fondest expectations. In orchard No. 2 there was a uniform blossoming on all of the plots. Notes taken this year closely approximated those of former years. Again turn to terminal growth. We have seen the average for the first two years. Notice that of 1916 as given in inches. They are as follows: 15.4, 8.4, 14.7, respectively, for the fertilized plots versus only 5.2 inches for the check. Note that the fertilized average is improving and that the check continues to decline.

Next notice yields in this orchard. The fertilized plots give yields as follows: 14.8, 15.5, 15.7 boxes, respectively, versus only 5.7 boxes for the check. Even were we to take on a three-year average the poor results for 1914, which would hardly be fair owing to the fact that no irrigation was given and that irregularity regarding application of fertilizer existed, we would still have averages as follows: 8.9, 9.2, 11.8 for the fertilized plots versus only 2.9 boxes for the check. Surely these are results we are all pleased to see.

Turn once more to orchard No. 1. Here, as will be noted, yields are good, but strong contrasts are lacking. The difference between the fertilized plots and the check is not large, but it does stand out strong on a three-year average. Note also that the terminal growth of 19.9 inches on the check slightly exceeds two of the fertilized plots and is approximately equal to the third. What has been the cause. It is easy to dismiss the subject by saying that trees which have produced little fruit for a number of years should begin to show form pretty soon. But in my judgment that explanation is somewhat unsatisfactory because I believe we have a better one. It is also worthy of note that unfertilized Newtowns of same age in this same experiment about which I have said nothing as yet produced on an average of 13.3 boxes per tree, only one-half box behind the fertilized trees. I have made a careful study of this orchard during this past summer when differences are most marked and in a general way can say that there is little to distinguish between the different plots except the stakes marking the same.

It will be recalled that this orchard was seeded to clover in 1914 and a good stand secured, that it was pastured by hogs and cattle in 1915 and this cover crop turned under in 1916. I take it

that owing to former soil conditions and the long years of clean cultivation given, which destroyed practically all of the organic matter of the soil, that the reintroduction of organic matter in large quantities, largely explains the apparent inconsistency between results in orchard No. 1 and orchard No. 2.

Looking at the subject from an unprejudiced standpoint these are facts we want to know, because there is an abundance of just such information going to waste all around us and should become common knowledge. Oftentimes an experimenter starts out to prove a definite preconceived idea regarding orchard fertilization, and if his vision is sufficiently narrow and his determination sufficiently great he usually collects enough data to prove his case. In my judgment these facts relating to orchard No. 1 in no wise minimize the importance of results secured in orchard No. 2, or in orchard No. 1 as far as that is concerned. They simply throw additional light upon the whole subject of orchard fertilization and compel us to look at the problem not from the standpoint of commercial fertilizers alone but also from the viewpoint of many other factors affecting the soil and which enter into the production of high-class fruit.

What are the conclusions we may safely draw for the average grower from work of this kind. First, I would say reservedly, "Don't be too enthusiastic." Now, that should mean a great deal to a body of trained horticulturists such as you. There is a very delicate balance existing in the tree between fruit production on the one hand and wood production on the other. Either, pushed to extremes, is accompanied by failure. It is obvious from the figures herewith presented that it is easily possible to overdo the whole thing.

Again, I have explained what were the governing factors which led up to the problems I have just discussed. Recall that owing to the years of clean cultivation given organic matter was practically depleted in the soil. The logical and sensible thing to do under these circumstances is to restore this organic matter as quickly as possible and thereafter maintain it in sufficient quantities to prevent a recurrence of the trouble. This fact should be constantly uppermost in your mind, that while nitrate of soda can very greatly improve the physical condition of the tree it cannot do the same thing for the soil. The greatest benefit to be derived from its use lies in the fact that it is a quick-acting fertilizer and enables the grower to tide over periods when the demands upon the soil are sufficient to justify its use. That it is a cheap fertilizer in normal times is also another factor of great importance, but in my judgment it will never be able to compete with that form of nitrogen which may be fixed and maintained in the soil by the judicious use of shade and cover crops. That it has been a great factor in covering a present need is obvious. Just what part it will play in a definite rotation in this valley should one become established

is a matter of conjecture, and time only can tell. In my judgment it will always play an important factor in high-class

fruit production in the Hood River Valley and possibly elsewhere where similar conditions prevail.

Orchard No.	Plat No.	Pounds per Tree		Treatment	Yields, Loose Boxes					Terminal Growth Inches	
		1914	1915		1914	1915	1916	Avg.		1914-15	1915-16
1	1	5.6	5.6	Clover manure	4.1	8.1	13.0	8.4		15.2	20.1
1	2	5.6	5.6	Clover manure	0.1	8.5	14.8	7.8		11.4	17.1
1	3	5.6	5.6	Clover manure	0.2	6.0	9.6	5.3		13.9	16.1
1	4	No fertilizer		Clover manure	0.2	0.3	8.8	3.1		6.9	19.9
2	1	6.75	6.75	Sod.....	1.9	10.0	14.8	8.9		8.4	15.4
2	2	6.75	6.75	Sod.....	2.3	9.9	15.5	9.2		10.3	8.4
2	3	6.75	6.75	Sod.....	9.8	10.1	15.7	11.8		10.9	14.7
2	4	No fertilizer		Sod.....	2.1	0.9	5.7	2.9		6.6	5.2

The Southern Pacific Railway has issued special low round-trip rates to all Southern California points. There is no place in the entire United States more delightful in winter time, either in climate or scenery, than Southern California.

The 1917 Rpple Crop.—On account of the very heavy apple crop of 1916, it is fair to assume in advance that the 1917 apple crop will be much smaller. It is a matter of fact and record that heavy apple crops do not follow each other two years in succession.



Frank Dorr, Wasco, Cal., and his J. H. Hale Peaches, from trees planted in 1914

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"Your trees are the hardiest, best rooted stock we receive, well packed and in good condition. Were I to order trees for myself, I would order them from your nursery."—H. B. M. Hall, Quarantine Inspector, California.

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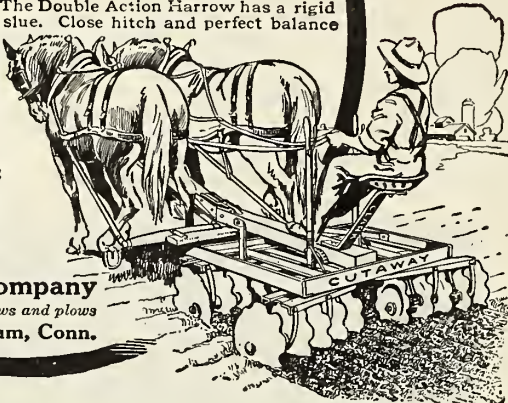
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Influence of Winter Pruning

Continued from page 14

steps to prevent. Winter pruning is only one of the factors which will aid you.

Professor Morris: You spoke of the pruning at the time trees are six or seven years of age being generally too much. People get in the habit of pruning young trees in order to develop stockiness and they get the habit. I believe a very great amount of tree growth and tree vigor and orchard finance is lost in excessive pruning from the time the trees are set until in full bearing. I believe very, very many people in every fruit-growing district of Washington have become over enthusiastic about heavy pruning and that they have lost very seriously because of it.

"My Story of Securing Fruit Bud Development by Summer Pruning," L. A. Pennoyer, Hamilton, Montana. You can't have too many fruit spurs on a tree—the more the better—but you don't have to use them all the same year. You can use one set one year and another set the next year so that you continuously have heavy crops of fruit. To get a great number of fruit spurs top in heavy in the winter to start with. That will make the tree throw out water suckers. Little limbs will come out from the crotch of the tree up. We stub these back to one, two or three inches and form fruit spurs out of those. In fact they will make fruit spurs all the way down the scaffold limbs. About the first of August when the terminal buds start to form we stub these in. This is our summer pruning. By stubbing all this excessive growth back is where we get our fruit spurs. In fact you get so many fruit spurs you don't know what to do with them. Young trees always bear large fruit; old trees will do the same thing on young wood. Our winter pruning consists in topping back every year, which throws thriftiness into the tree and also into the spurs. By this method when a tree gets into bearing it will hold up an enormous load without breaking down. Don't let your trees get old. You have got so many fruit spurs you can spare some. Cut clear back to the limbs and new spurs will come out and you will get new wood again.

Question: What is the age of your trees?

Mr. Pennoyer: From four years old up to twenty.

Professor Morris: On the trees twenty years old what is approximately the greatest length of extensional growth, the average of the season's growth in the top?

Mr. Pennoyer: From two to three feet up to forty inches.

Question: What varieties do you grow?

Mr. Pennoyer: Wealthy and McIntosh, although we have Spys and Ben Davis.

Question: What do you consider a good yield from your older trees in the number of boxes per tree?

Mr. Pennoyer: Our McIntosh trees, fifteen years old, this year averaged eleven, twelve and thirteen boxes.

Question: How many trees to the acre?

Mr. Pennoyer: One hundred.

Professor Morris: What time do your trees blossom?

Mr. Pennoyer: The Bitter Root Valley comes in almost any old time from the first of April to the first of June. There is also great variation in the time of the first killing frost.

Professor Morris: Your season is very short, from 100 to 160 days frost free.

Mr. Pennoyer: Our trees blossom as late as the 10th of June and mature a fine crop of apples.

Mr. Van Marter, Opportunity, Washington: In thinning do you take blossom or fruit entirely off from the spur?

Mr. Pennoyer: After the fruit gets through falling we take the fruit entirely off every other or every third spur. Those spurs will give the crop next year.

Question: Do you prune all varieties the same way?

Mr. Pennoyer: We work mostly on the McIntosh and the Wealthy. The Spy does not bear heavily with us, but this year, by these methods we got a heavy crop of Spys.

Question: How old are your Spy trees?

Mr. Pennoyer: Eleven years old. Never got a decent crop until this year when we got about two-thirds of a crop.

Professor Lewis: The Spy does not come in much before eleven years. The Wealthy and McIntosh bear on spurs and terminal buds; you don't have to depend on the spurs alone in those varieties for the fruit. With the Spy you have got to depend on the spur almost entirely. There is probably no variety that beats the Wealthy to bear on year-young wood.

M. L. Dean, State Horticultural Inspector, Missoula, Montana: I want to explain that in the Bitter Root Valley we have a different range of soil and a different growth of trees from most of you. Our soil is mostly disintegrated granite and does not produce as strong a growth as your soil does and that permits Mr. Pennoyer to handle his trees differently. I have visited this orchard and think he is the only one that follows this system of pruning and we all know that he is a radical pruner, but he gets the results just the same. When we want some McIntosh apples to send away to a fair to take a prize we go to Mr. Pennoyer's orchard to get them. Since starting this system of pruning he has described, heading back and developing that fruit-bud system, the limbs of his trees are one solid line of fruit.

C. C. Vincent, University of Idaho: I presume some of you remember that two years ago I prepared a paper on summer pruning giving the results of experiments we had made over a period of five or six years. Our conditions at Moscow are somewhat different from yours. Our elevation is 2,000 to 2,500 feet with 24 inches of rainfall, so that

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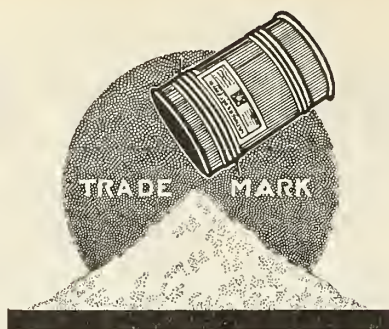
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we couldn't irrigate. Two years ago I made the statement that we had during the course of our experiments materially increased by the practice of summer pruning the yield and also secured higher color to our fruit. The experiments as originally planned were to take a block of trees planted in 1905 and give them nothing but winter pruning and to set aside another block to which only summer pruning was given.

Following are the figures showing the average yield in pounds per tree for 1916:

Variety	Winter Pruned, lbs.	Summer Pruned, lbs.
Jonathan	239.4	272.1
Grimes Golden	197.0	108.3
Rome Beauty	105.7	160.6
Wagener	177.4	215.5
Extra Fancy	35%	65%

With the Grimes Golden we were able to get a decided increase in the summer-pruned plot in 1914. The crop was especially large all over the trees and we made the mistake of not thinning enough. That threw us off on the summer-pruned lot again this year.

Our system of summer pruning was this: The trees were shaped after the tree growth had stopped, which is usually after the terminal buds set, but this varies from year to year. This year we didn't get at our pruning until the first of September on account of the season. I believe the results from summer pruning will depend almost entirely upon the time at which the pruning is done. If you prune too early you will get a secondary growth of wood, which shouldn't happen in a bearing orchard. Our winter-pruned trees we prune in the same way and shape up the tree from the time it is planted. Up to the time the trees come into bearing we prune, thin out and shorten back; after the trees come into bearing we eliminate to a certain extent the cutting back of the terminals because as trees begin to bear the terminals make a shorter growth. This past year we cut very little terminal growth.

Question: What is the average circumference of your trees?

Professor Vincent: I haven't any data on the limb growth and the circumference. However, about a foot from the ground I find that the winter-pruned trees are a trifle larger than the summer-pruned trees. Winter-pruned Jonathans averaged something like 22.2 inches and summer-pruned 22 inches.

Mr. Magness: What brought the fruit from the winter-pruned trees into the Fancy and C grades?

Professor Vincent: It was a matter of color entirely.

The First National Bank, Portland, Oregon, has just completed and is now occupying its new building, which is considered one of the handsomest bank buildings in the United States. The First National Bank of Portland is the only bank in the Northwest occupying the entire building. The bank reminds one in many ways of the Bank of England. A year ago the First National Bank of Portland took out an insurance policy covering the life of every employee.



One piece Pruner. Pruning Shears for top dressing, cutting berry bushes, rose bushes, etc.

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Fruit Growers' Conference, Spokane, 1916

[Editorial Note.—Since the Fruit Growers' Conference at Spokane strong opposition has developed to changing the present grading rules. The fruitgrowers are divided. It does not look wise to make a change unless the change will be satisfactory to a large majority of the growers. The fact of the matter is that no desire to change the grading rules occurred until 1916. When a change is made it should be made with due deliberation, not hastily, with a perfect understanding of market requirements. Another important fact in connection with changing the grading rules would be a definite knowledge of the profit the change will bring to the grower. It hardly seems there is sufficient information on these two subjects at the present time to jump into something, turning from grades that are not perfectly satisfactory at the present time to other grading rules that are not known well enough and satisfactory to a large majority. It seems to the editor of "Better Fruit" that inasmuch as Eastern fruitgrowers are putting up a better grade the Northwest should rather look to improve the grade instead of lowering it. The editor, for some time, has had the impression that when a change is made that only two grades should be packed, the C grade to be eliminated. However, with this proviso, some method should be adopted to control the amount of C grade, or the third grade, if it is packed at all, so that the quantity put up will be just about sufficient to supply the territory west of the Mississippi River. The editor of "Better Fruit" is convinced it will not pay to ship C grade east of the Mississippi River. In a nut-shell, the editor does not believe the fruitgrowers are sufficiently united to know just how to adopt new grading rules, or that they are sufficiently informed or have given the matter thorough enough investigation to know definitely just what changes in grading rules will be advisable, and therefore believes they should be held in abeyance for at least one year.]

THE meeting was called to order by Assistant Commissioner of Agriculture T. O. Morrison, who read the official call for the meeting and then called for the election of a chairman. C. H. Hinman of Yakima nominated J. L. Dumas of Walla Walla. Seconded. Mr. T. O. Morrison and Dr. D. W. King of Wenatchee were also nominated.

Moved by L. Tichenal of Wenatchee that nominations be closed. Seconded. Carried.

J. L. Dumas was elected chairman, the election later being made unanimous.

J. R. Schwartze of Yakima nominated H. E. Waterbury of North Yakima for Secretary. Mr. Waterbury was elected.

Discussion followed as to seating of delegates, several speakers contending

that only duly elected delegates should be allowed to hold proxies.

Moved that only duly elected delegates be allowed to sit in the meeting or to hold proxies. Seconded. Motion lost.

A credentials committee consisting of A. A. Bousquet and N. D. Austin of Wenatchee and Ed Remy of Yakima was nominated and elected. An intermission was taken during the retirement of the credentials committee, the time being employed in a discussion of the horticultural laws of the State of

Washington by F. B. Utter, T. O. Morrison, W. P. Sawyer, L. Tichenal, C. H. Furman, W. Gwyn, Guy Seaton, J. F. Sugrue, W. O. Dow, Hanson, Patterson, Mrs. J. H. Stuckrath, Mr. Allen of Medford, Oregon, Commissioner Dean of Montana and R. M. Winslow, Provincial Horticulturist of British Columbia.

The Credentials Committee having completed their work, the chairman called for a report. N. D. Austin presented the report of the committee showing the seating of the following delegates with proxies as noted:

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Write for Particulars

Report of Credentials Committee on Seating of Delegates

YAKIMA VALLEY

Authorized delegates:

	Personal Vote	Proxies	Total Vote
George Biehn	1	..	1
Mrs. B. F. Moore	1	..	1
S. M. McKee	1	..	1
F. P. Horshell	1	..	1
J. W. Adamson	1	..	1
E. H. Powell	1	..	1
J. T. Baird	1	..	1
T. E. Stone	1	..	1
Robert Morgan	1	..	1
Jim Lancaster	1	..	1
H. C. Brown	1	..	1
A. G. Peterson	1	..	1
C. W. McCullagh	1	..	1
Ed Remy	1	1	2
J. W. Smith	1	..	1
Dr. P. W. Cornue	1	..	1
F. A. Williams	1	..	1
J. V. Vickers	1	..	1
H. C. Benson	1	..	1
Joe Hess	1	..	1
C. L. Hamilton	1	1	2
E. L. Porter	1	4	5
C. H. Swigart	1	1	2
C. H. Hinman	1	4	5
C. E. Sanderson	1	2	3
G. H. Tonnemacher	1	4	5
J. R. Schwartz	1	4	5
A. M. Burns	1	3	4
A. J. Reese	1	1	2
H. I. Macbeth	1	3	4
L. J. Shadbolt	1	3	4
L. I. Barbee	1	2	3
John Ramerman	1	1	2
E. J. Hatch	1	1	2
C. H. Furman	1	1	2
I. E. Waggoner	1	1	2
T. R. Slusher	1	1	2
J. C. Childs	1	1	2
C. E. Williams	1	1	2
J. W. Smith	1	1	2
B. F. Phelps	1	1	2
A. J. Reese	1	1	2
A. W. Losey	1	1	2
Elmer Dahlin	1	1	2
Total Yakima Valley, 78 votes.			

WENATCHEE-NORTH CENTRAL WASHINGTON

Authorized delegates:

	Personal Vote	Proxies	Total Vote
John Isenhardt	1	..	1
N. D. Austin	1	..	1
Ted Gibbons	1	..	1
J. B. Shons	1	..	1
August Moech	1	..	1
Dick Everett	1	..	1
John Gear	1	..	1
Ben F. Smith	1	..	1
T. J. East	1	..	1
C. A. Leedy	1	1	2
Wm. Hayden	1	1	2
H. I. Shotwell	1	..	1
Frederick S. Sydow	1	1	2
W. B. Hampson	1	..	1
W. H. Dixon	1	2	3
C. J. Peters	1	2	3
M. W. Starks	1	..	1
J. A. Warman	1	..	1
F. A. Wingate	1	..	1
H. W. Gates	1	..	1
E. T. Balch	1	2	3
Thomas Johnson	1	..	1
J. F. Sugrue	1	1	2
Alvin Rutledge	1	..	1
E. S. Russell	1	..	1
A. A. Bousquet	1	..	1
F. B. Utter	1	..	1
O. G. Tish	1	..	1
Dr. D. W. King	1	..	1
Eugene Page	1	..	1
Charles Cooper	1	..	1
S. O. Pool	1	..	1
C. A. Sterling	1	..	1
E. C. Huff	1	..	1
P. W. Lawrence	1	..	1
A. C. Tedford	1	..	1
Charles Goss	1	1	2
O. G. France	1	1	2
J. H. Ferryman	1	..	1
C. L. McKittrick	1	1	2
B. Clement	1	1	2
H. A. Keisling	1	..	1
C. T. Haskell	1	..	1
F. W. Lary	1	..	1
W. H. Humphrey	1	1	2
P. M. Martin	1	1	2
J. G. Kennedy	1	..	1
E. C. Simonson	1	..	1
C. C. Moore	1	1	2
J. L. Weythman	1	2	3
Warren O. Dow	1	1	2
Ben Pickett	1	..	1
E. J. Brodrick	1	..	1

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The
**Chas. K. Spaulding
Logging Co.**
Salem, Oregon



WENATCHEE - NORTH CENTRAL DISTRICT—Continued

	Personal Vote	Proxies	Total Vote
Ted Patterson	1	..	1
Robert Griffith	1	2	3
C. W. Babcock	1	..	1
J. N. Dodson	1	..	1
W. Gwyn	1	..	1
Tom Larson	1	1	2
C. R. Clark	1	1	2
M. V. Tukey	1	..	1
L. H. Tichenal	1	..	1
E. J. Nicholson	1	..	1
O. E. Storch	1	..	1
Total, Wenatchee-North Central Washington, 80 votes.			

SPOKANE DISTRICT

	Personal Vote	Proxies	Total Vote
L. J. Blot	1	4	5
Guy Scaton	1	..	1
L. McLean	1	1	2
John F. Davies	1	..	1
A. G. Craig	1	..	1
Total, Spokane District, 10 votes.			

WALLA WALLA DISTRICT

	Personal Vote	Proxies	Total Vote
J. W. Langdon	1	..	1
P. H. Weyrauch	1	..	1
C. W. Gilbreath	1	..	1
J. D. Taggard	1	..	1
J. L. Dumas	1	..	1
O. F. Erbes	1	..	1
Total, Walla Walla District, 6 votes.			

WHITE SALMON DISTRICT

	Personal Vote	Proxies	Total Vote
Dr. H. L. Geary	1	..	1
Paul Mc Kercher	1	..	1
Total, White Salmon District, 2 votes.			

Signed

A. A. BOUSQUET,
N. D. AUSTIN,
E. REMY,
Credentials Committee.

Moved by E. L. Porter of Yakima that the report be adopted. Seconded. Carried.

Meeting adjourned until 1:15 p. m.

AFTERNOON SESSION

Meeting was called to order by the chairman.

Moved by J. R. Schwartz of Yakima that the meeting take up the Extra Fancy grade and develop it under the name of First Grade, Grade No. 1, or Extra Fancy. Seconded. Carried.

Moved by J. R. Schwartz of Yakima that "First Grade, Grade No. 1 or Extra Fancy apples are defined as sound, smooth, mature clean, hand-picked, well-formed apples only, free from all insect pests, diseases, blemishes, bruises and other physical injuries, scald, scab, scale, dry or bitter rot, worms, worm holes, spray burn, limb rub, visible watercore, skin puncture or skin broken at stem, but russetting within the basin of the stem will be permitted." Seconded. Discussion. Carried.

Moved by J. R. Schwartz of Yakima

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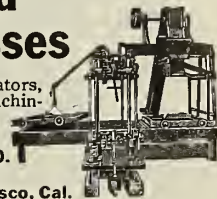
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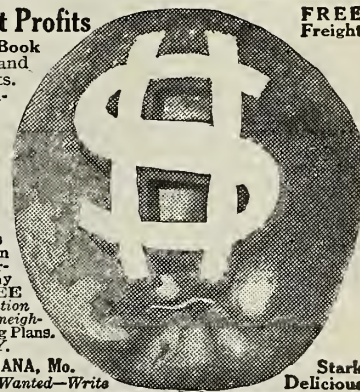
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Delicious

Anjou and Bartlett Pears and Cherries

An extra fine stock of these, both one and two years, besides a general line of other nursery stock. Prices most reasonable. Let us quote you on your list.

CHRISTOPHER NURSERIES

Christopher, Washington

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GOOD AS CAN BE GROWN
Prices Below All Others

I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K.—money refunded.

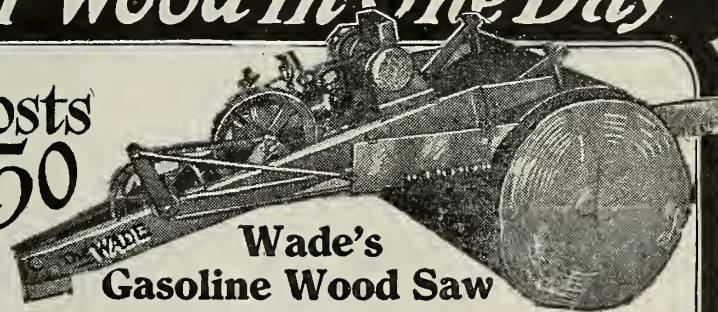
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This wonderful invention does TEN TIMES the work of TWO MEN out in the woods. It's as necessary to the man cutting wood as the automobile is to the man who has to get somewhere in a hurry.

With it you can make money out of your wood simply through the immense saving in time and labor. One man can handle it on a log and two can move it from log to log. Will cut a 40 in. log in 5 minutes. Write us now for booklet which gives full details.

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PORTLAND, ORE. SPOKANE, WY.

1842 The Seventy-Fifth Anniversary of 1917



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Built for the Field Test.

Three-Quarters of a Century of "Knowing How" Hammered Into Every One of Them.

The product of the Parlin & Orendorff Co. has always been noted for simplicity of construction, great strength and ease of operation. It was upon such a basis that the founders of this business made their implements, established their reputation, and built their factory. It is upon the same foundation that the business has been carried on to this day, and in 1917 we celebrate our Diamond Jubilee; 75 years of practical experience gained through constantly striving to provide for the exacting requirements of three generations of American farmers.

For an even three-quarters of a century we have met the demand, and today we operate the largest and oldest permanently established plow factory in the whole world. "It's the way we build them."



Light Draft Plows, Harrows, Planters and Cultivators are made in all types and sizes, to meet the conditions in all sections, and are Backed by an Unqualified Guarantee.

We also make the most complete line of Traction Engine Plows produced, and we have a special catalog devoted to these famous plows.

The P&O Little Genius Engine Gang Plow

was the most popular plow shown at all points on the 1916 National Tractor Demonstration.

We will send P & O Catalogs to any address. While P & O Implements are sold only through established implement dealers, we welcome correspondence from farmers in all sections.

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Superb Variety. Will bear from June to November, of large, sweet, red berries, very solid and productive.

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311 Morrison Street
PORTLAND, OREGON

that the following varieties be classed as "Solid Red Varieties":

Aiken Red, Arkansas Black, Baldwin, Black Ben Davis, Black Twig, Kaighn Spitzenberg, Gano, McIntosh Red, Wine-sap, Spitzenberg (Esopus), King David, Vanderpool. Seconded.

Dr. King of Wenatchee asked for information on the various varieties of Spitzenberg and the reason for leaving Jonathan out of the "Solid Red Varieties."

Mr. Gwyn of Wenatchee asked for information whether all "Solid Red Varieties" were presumed to carry the same percentage of color. Mr. Schwartz explained that it was his plan to consider color percentage later.

Mr. L. J. Blot of Spokane protested against lowering the standard of Jonathan.

J. F. Sugrue of Wenatchee spoke in favor of maintaining the standard of Jonathan.

Moved by C. R. Clark of Wenatchee as an amendment to the Schwartz motion that Kaighn Spitzenberg and Gano be taken out of the "Solid Red Varieties." Seconded.

The vote of the meeting being taken separately on these two varieties, Kaighn Spitzenberg was transferred to the "Striped or Partial Red Varieties" and Gano left in the "Solid Red Varieties."

It was moved and seconded that Jonathan be included in the "Solid Red Varieties."

Moved by N. D. Austin of Wenatchee that a roll-call vote be taken. Seconded. Carried.

On roll call 75 votes were recorded for the motion and 85 against. Motion lost.

Moved by E. S. Russell of Wenatchee that, in order to facilitate matters and save time, the chairman of each delegation cast the vote of his delegation, any dissenting votes to have the privilege of announcing themselves, excepting that if demanded a roll-call vote shall be taken. Seconded.

Moved by John F. Davies of Spokane, as an amendment that the chairman of each delegation "announce" rather than "cast" the vote. Seconded. Amendment carried. Original motion carried.

J. F. Sugrue of Wenatchee protested the vote of the Cashmere delegation, claiming that they were not following their instructions, and he presented to Assistant Commissioner Morrison a resolution said to be signed by the majority of the Cashmere growers.

W. Gwyn of Wenatchee contradicted Mr. Sugrue and protested against the introduction of the resolution in the records of the meeting. No action was taken.

J. R. Schwartz of Yakima presented the following list of "Striped or Partial Red Varieties" and moved its adoption:

Delicious, Stayman, Jonathan, Snow, Ben Davis, Hubbardston, Northern Spy, Jeniton, Rainier, Missouri Pippin, York Imperial, Wealthy, Wagener, Gravenstein, Jeffrey, Kaighn Spitzenberg, King of Tompkins County, Rome Beauty. Seconded.

Moved as amendment that Black Twig be placed in the list of "Striped or Par-

Prune Your Trees with GIANT PRUNERS

Cuts every size and kind of limb up to 3 inches thick. with 1 operation

Makes a Clean Cut
Does not Tear Bark
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A very complete line of
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SPECIALTIES

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tial Red Varieties." Seconded. Amendment was lost.

Moved by E. S. Russell of Wenatchee that a caucus of Delicious growers be held for the purpose of making recommendations on the requirements for Delicious. Seconded.

Chairman Dumas ruled the motion immaterial and out of order.

The Schwartz list of "Striped or Partial Red Varieties" was carried as read.

Moved by J. R. Schwartz of Yakima that the "Red Cheeked or Blushed Varieties" include the following:

Hydes King, Maiden Blush, Winter Banana, Red Cheeked Pippin.

Seconded. Carried.

Moved by J. R. Schwartz of Yakima that the "Yellow or Green Varieties" include the following:

Grimes Golden, Yellow Newtown, Cox's Orange Pippin, Ortley and White Winter Pearmain. Seconded.

Moved as an amendment by C. R. Clark of Wenatchee that Northwestern Greening, Rhode Island Greening and Yellow Bellefeur be included in the list of "Yellow or Green Varieties." Seconded. Amendment carried. Original motion carried.

Moved by F. B. Utter of Wenatchee that the percentage of color be computed on the basis of aggregate color rather than solid color. Seconded.

Moved as an amendment by J. A. Warman of Wenatchee that the percentage of color in "Solid Red Varieties" be computed on the basis of solid color and in the "Striped or Partial

UNCLE JOHN SEES THE LIGHT.

WHAT DID I TELL YOU, UNCLE JOHN?
GOOD GOODS; HEY, WHAT?

GOL DINGED IF IT AINT!
YOU DON'T HAVE TER
GRIND ON IT.
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AND THE SIZE CHEW
ISNT HALF AS BIG
AS YOUR OLD ONE. IT
TASTES BETTER, TOO,
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THE young fellows teach the old ones and the old ones teach the young—that's the way it is with W-B CUT chewing right along. Less chewing for feeble jaws, less chewing for husky jaws—but the big point is *satisfaction*. Never before has there been so much satisfaction in so *little a chew*. It's *rich* tobacco, W-B CUT is. It makes you feel sorry for the fellows who chew so much of the old kind for so little benefit.

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Improve Your Trees
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which contains 15% nitrogen immediately available.

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WE ALSO HANDLE

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guaranteed to contain 17½% acid phosphate, also immediately available.

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ONE OF A THOUSAND
"I never was a great friend of the shovel, and since I have used the MARTIN, the shovel and I have entirely dissolved partnership." F. H. LYTLE, Pioche, Nevada.

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AT the left we show our new patented staple and felt reinforcing device which prevents the hooks from coming off easily.

This attachment overcomes a large per cent of trouble formerly experienced by pad users. It is the greatest single improvement on horse collar pads since pads were invented, and adds greatly to their long-lasting quality. This form of attachment is

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Look for it on all pads you buy and refuse a substitute.

Ask your dealer for free Tapatco booklet showing Tapatco pads in various colors and containing many valuable emergency horse remedies. If your dealer hasn't this booklet, request him to write us direct for it.

We also make a complete line of Riding Saddle Pads.
Sold by dealers everywhere.

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NEW PROCESS PROTECTED SPRAY HOSE

For Spraying, Painting, Whitewashing, etc.



**LIGHT, STRONG, FLEXIBLE, CAN'T KINK, TWIST, BURST,
COLLAPSE OR CHAFE**

Manufactured by an entirely New Process.

The result of 30 years experience.

Ask for folder.

Northwest Representative **J. W. GOEBEL, Salem, Oregon**

MULCONROY CO., Inc., PHILADELPHIA

Established 1887

Red Varieties" as aggregate color. Seconded. Amendment lost. Original motion carried.

Moved by J. R. Schwartze of Yakima that the minimum color requirements for Extra Fancy apples be as follows:

Solid Red Varieties

Aiken Red	75%
Arkansas Black	75%
Black Ben Davis	75%
Gano	75%
Vanderpool	75%
Winesap	75%
Baldwin	50%
Black Twig	50%
King David	75%
Spitzenberg (Esopus)	75%
McIntosh Red	50%

Striped or Partial Red Varieties


Delicious	66% ² %
Stayman	66% ² %
Jonathan	66% ² %
Kaighn Spitzenberg	66% ² %
Ben Davis	50%
Hubbardston	50%
Jenilton	50%
Northern Spy	50%
Rainier	50%
Snow	50%
Wealthy	50%
York Imperial	50%
Rome Beauty	50%
Wagener	50%
Missouri Pippin	50%
Gravenstein	25%
Jeffrey	25%
King of Tompkins Co.	25%

Seconded.

E. S. Russell of Wenatchee spoke in favor of lowering color requirements of Delicious and again asked for a caucus of Delicious growers. He was again ruled out of order by the chair.

L. J. Blot of Spokane objected to lowering the color requirements of the Baldwin and on behalf of the Spokane district, as the largest shipper of Baldwins, moved as an amendment that the minimum color required for Baldwin be 75%. The amendment was accepted by Mr. Schwartze as chairman of the Yakima delegation.

Moved as an amendment by E. S. Russell of Wenatchee that the minimum color requirement for Delicious be changed from 66%²% to 50%. Seconded. Amendment lost.



**CHUBBUCK'S IDEAL
GOPHER TRAP**

Larger than runway;
Jaws pull rodent in;
catches large or small gopher and holds it.
Farmers say it's worth dozen other makes.
Big sales. Price 50c. If not at your dealer's will send
it to you postpaid: 2 for 95c; 6 for \$2.70; 12 for \$5.10.
Money back if you are not satisfied. Free circulars.
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Mr. Fruit Grower:—

In introducing the Downs Gold Medal Peach to the public, I am offering you the best peach in existence. This has been proved in competition with all the leading varieties at the World's Fair and many other places. It has cost me hundreds of dollars to be able to offer you this great peach and prove its merits, but it will make you money to prove it out for yourself, as it stands without an equal, viewed from any standpoint. Allow me to assure you that if you grow any peaches for any purpose you cannot afford to not grow the Downs Gold Medals.

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Produce Reporter Co.
CHICAGO

Moved as an amendment by John Isenhardt of Wenatchee that the minimum color requirements for Stayman be changed from 66% to 50%. Seconded. Amendment lost.

Moved as an amendment by Chairman J. L. Dumas, who took the floor with the consent of the house, that the minimum color requirement for Kaighn Spitzenberg be changed from 66% to 50%. Seconded. Carried.

Original motion by Schwartz, as amended, was carried.

Moved by J. R. Schwartz of Yakima that the color requirement for the "Red Cheeked or Blushed Varieties" be "a perceptibly blushed cheek." Seconded. Carried.

Moved by J. R. Schwartz of Yakima that the color requirement for "Yellow or Green Varieties" be "characteristic color." Seconded. Carried.

Moved by J. R. Schwartz of Yakima that the meeting take up the second grade under the name of "Second Grade, Grade No. 2 or Standard Grade." Seconded.

Discussion of the change of name from "Fancy" to "Standard" with C. H. Hinman of Yakima and F. B. Utter of Wenatchee taking the floor in favor of the change and E. T. Balch of Wenatchee and L. J. Blot and John F. Davies of Spokane speaking in opposition. On a point of order raised by Mr. Davies the chair ruled the motion out of order as in conflict with the statute.

Moved by J. R. Schwartz of Yakima that the Fancy grade be defined as follows:

"Second Grade, Grade No. 2 or Fancy apples are defined as apples complying with the requirements for first grade apples except that slight sunscald or other blemishes not more than skin deep shall be permitted up to a total of 10% of the surface of the apple." Seconded.

A long discussion followed with E. L. Porter, S. M. McKee and C. H. Hinman of Yakima and W. O. Dow of Wenatchee speaking in favor of the motion and particularly in favor of the provision for 10% blemish, while W. Gwyn, J. A. Warman and J. F. Sugrue of Wenatchee were opposed to allowing more than 5% blemish.

Moved as an amendment by W. Gwyn of Wenatchee that the maximum blemish allowed be 5% instead of 10%. Seconded. Amendment lost. Original motion carried.

Moved by J. R. Schwartz of Yakima that the following color schedule be adopted for the second grade:

Solid Red Varieties

Aiken Red	25%
Arkansas Black	25%
Black Ben Davis	25%
Gano	25%
King David	25%
Spitzenberg (Esopus)	25%
Vanderpool	25%
Winesap	25%
Baldwin	15%
Black Twig	15%
McIntosh Red	15%

Striped or Partial Red Varieties

Delicious	15%
Jonathan	15%
Stayman	15%
Hubbardston	10%
Ben Davis	10%
Jenitou	10%

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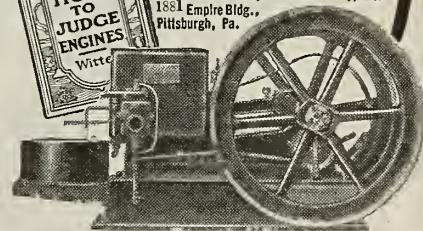
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Northern Spy	10%
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Missouri Pippin	10%
Snow	10%
Wealthy	10%
York Imperial	10%
Rome Beauty	No color
Wagener	10%
Gravenstein	10%
Jeffrey	10%

Seconded.

Moved as an amendment by L. J. Blot of Spokane that the minimum color requirement for Baldwin be 25% instead of 15% as read. Amendment accepted by the Yakima delegation. Motion as amended was carried. Moved by J. R. Schwartz of Yakima that the "Red Cheeked or Blushed Varieties" require "a tinge of color" and the "Yellow or Green Varieties" require "characteristic color."

On suggestion of C. A. Leedy of Wenatchee, accepted by the Yakima delegation, requirements for Winter Banana were changed from "a tinge of color" to "characteristic color."

Color schedule, as amended, was carried.

Moved by J. R. Schwartz of Yakima that "Third Grade, Grade No. 3 or C Grade, shall consist of all remaining apples, free from infection, and if shipped in closed packages shall be marked "Third Grade." Seconded. Discussion as to whether worm stings should be included in this grade.

F. B. Utter of Wenatchee offered as an amendment a resolution calling for an amendment to Section 15 of the Horticultural Law so that worm stings be allowed. Chair ruled that it is not an amendment and out of order.

J. R. Schwartz, with the consent of his second, modified his motion to read as follows: "Third Grade, Grade No. 3 or C Grade apples shall consist of all remaining apples, free from infection, excepting that if the next legislature so permits, two healed stings to the apple shall be allowed, and if shipped

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in closed packages shall be marked 'Third Grade' or 'C Grade.'"

Discussion followed on worms, worm stings and the meaning of the word "infection."

Moved as an amendment by A. A. Bousquet of Wenatchee that the words "two" and "healed" be stricken from the motion. Seconded.

Mr. Schwartz accepted part of the Bousquet amendment and presented his motion to read as follows: "Third Grade, Grade No. 3 or C Grade shall consist of all remaining apples free from infection excepting that two worm stings to the apple shall be allowed, providing that the next legislature shall amend Section 15 of the Horticultural Law to permit."

Moved as an amendment by W. Gwyn of Wenatchee that the clause relating to the legislature be stricken out. Seconded. Amendment carried.

Moved as an amendment by Guy Seaton of Spokane that pin-point scab not to exceed an aggregate of one-sixth of an inch in diameter be allowed in this grade. Seconded. Amendment lost.

Schwartz's motion as amended was carried.

Moved by L. H. Tichenal of Wenatchee that the following resolution be adopted: "Resolved, that our Senators and Representatives-elect be instructed to work and vote for an amendment to our state law permitting the shipment of worm-stung apples in accordance with the views expressed by the growers and delegates here assembled." Seconded. Carried.

Moved by W. Gwyn of Wenatchee, "Resolved, that the apples which are to be exported can be named anything we like." Seconded.

Mr. Morrison, upon interrogation, suggested that the federal authorities be consulted. No vote taken on the motion.

Moved by C. H. Hinman of Yakima that Third Grade or C Grade apples be shipped unwrapped. Seconded.

Moved as an amendment by W. O. Dow of Wenatchee that those desiring to wrap this grade shall have the priv-

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ilege of doing so. Seconded. Amendment carried. Motion as amended carried.

Discussion took place on limiting sizes in various grades.

Moved by J. F. Sugrue of Wenatchee "that any size apple be admitted to the grades providing it be large enough to carry two stings and pin-point scab." No second.

Voted not to take action on sizes at this meeting.

Moved by C. R. Clark of Wenatchee that color as established for second grade be considered in connection with the defects. Seconded. Motion lost.

Moved by J. R. Schwartz of Yakima that the "Summer and Early Fall Varieties be packed as in 1916. Seconded. Carried.

Moved by C. H. Hinman of Yakima that the combination grades and orchard run be packed as in 1916. Seconded. Carried.

Moved by W. Gwyn of Wenatchee that all apples packed otherwise than according to the foregoing grading rules shall be accompanied by a printed description of the contents of each package. Seconded. Carried.

The following resolution was presented by John Isenhardt of Wenatchee and was unanimously adopted. "Resolved, that the delegates of this convention express to Mr. Dumas their hearty appreciation of his very fair and impartial rulings as chairman of this assembly."

As there was no further business to be presented to the meeting the chairman declared it adjourned.

Signed

J. L. DUMAS,

Chairman.

H. E. WATERBURY,

Secretary.

Apple - Grading Rules, Proposed by Third Grade and Pack Conference

First Grade, Grade No. 1 or Extra Fancy apples are defined as sound, smooth, mature, clean, hand-picked, well-formed apples only, free from all insect pests, diseases, blemishes, bruises and other physical injuries, scald, scab, scale, dry or bitter rot, worms, worm stings, worm holes, spray burn, limb rub, visible watercore, skin puncture or skin broken at stem, but slight russetting within the basin of the stem will be permitted.

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Second Grade, Grade No. 2 or Fancy apples are defined as apples complying with the requirements for first-grade apples except that slight sunscald or other blemishes not more than skin deep shall be permitted up to a total of 10% of the surface of the apple.

Third Grade, Grade No. 3 or C Grade apples shall include all remaining apples free from infection excepting that two stings to each apple shall be permitted, and if shipped in closed packages shall be marked "Third Grade or C Grade."

Combination Extra Fancy and Fancy Grade: When first and second-grade apples are packed together the package must be marked "Combination Extra Fancy and Fancy."

Combination grade may also include all other apple varieties not provided for in First and Second Grades.

When Second and Third Grade apples are packed together the package must be marked "Combination Second and Third Grade."

When First, Second and Third Grade apples are packed together the package must be marked "Orchard Run," but orchard-run packages must not contain any apples that would not meet the requirements of third grade.

Summer and Early Fall Varieties: Summer varieties such as Astrachan, Bailey's Sweet, Bietigheimer, Duchess, Early Harvest, Red June, Strawberry, Twenty Ounce Pippin, Yellow Transparent and kindred varieties not otherwise specified in these grading rules, together with early fall varieties such as Alexander, Blue Pearmain, Wolf River, Spokane Beauty, Fall Pippin, Waxen, Tolman Sweet, Sweet Bough and other varieties not provided for in these grading rules, as grown in sections of early maturity, shall be packed in accordance with the grading rules covering Fancy grade as to defects but regardless of color.



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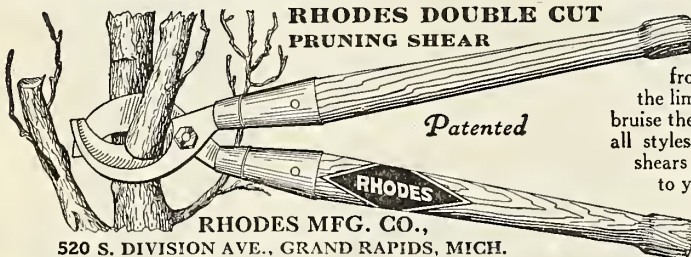
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The following varieties shall be admitted to the Extra Fancy and Fancy grades, subject to the color requirements herewith specified:

Striped or Partial Red Varieties

	Extra Fancy	Fancy
Delicious	66 2/3 %	15 %
Jonathan	66 2/3 %	15 %
Stayman	66 2/3 %	15 %
Ben Davis	50 %	10 %
Hubbardston	50 %	10 %
Jeniton	50 %	10 %
Kaighn Spitzenberg	50 %	10 %
Missouri Pippin	50 %	10 %
Northern Spy	50 %	10 %
Rainier	50 %	10 %
Rome Beauty	50 %	No color
Snow	50 %	10 %
Wagener	50 %	10 %
Wealthy	50 %	10 %
York Imperial	50 %	10 %
Gravenstein	25 %	10 %
Jeffrey	25 %	10 %
King of Tompkins Co.	25 %	10 %

Solid Red Varieties

	Extra Fancy	Fancy
Aiken Red	75 %	25 %
Arkansas Black	75 %	25 %
Baldwin	75 %	25 %
Black Ben Davis	75 %	25 %
Gano	75 %	25 %
King David	75 %	25 %
Spitzenberg (Esopus)	75 %	25 %
Vanderpool	75 %	25 %
Winesap	75 %	25 %
Black Twig	50 %	15 %
McIntosh Red	50 %	15 %

Red Cheeked or Blushed Varieties

Hydes King, perceptibly blushed cheek, tinge of color.

Maiden Blush, perceptibly blushed cheek, tinge of color.

Red Cheeked Pippin, perceptibly blushed cheek, tinge of color.

Winter Banana, perceptibly blushed cheek, characteristic color.

Yellow or Green Varieties

For Extra Fancy and Fancy, characteristic color.

Grimes Golden.

Yellow Newtown.

Cox's Orange Pippin.

Ortle.

White Winter Pearmain.

Yellow Bellefleur.

Northwestern Greening.

Rhode Island Greening.

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If after 30 days you decide to keep the great
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charged in Belgium plus only \$1.75 for water freight.

Seize this opportunity to get a highest grade separator on this astounding offer. You want a quality
separator, one that you can be proud of all your life, one that will never
bother you and that will always give you the maximum amount of cream
without loss. So, we recommend to you the Imported Belgian Melotte—the
separator with the wonderful self-balancing bowl that can not get out of
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offer. The Melotte is guaranteed for 15 years. Write now, *while this offer lasts*.

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Have *every* manufacturer that is will-
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a 30 day free trial, ask him *why* he won't—
get his reason.

Set them all up side by side, the Melotte and
all the others, and then make the test. Keep a
record of the results. See which skims the
closest—which gives you the most cream. Fig-
ure out, on this basis, which will bring you
the most profit. Notice which machine is
easiest to operate—which is the least tiring.
Then notice the construction. Which will stand
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Then decide. Keep the one which has proved best.
We are willing to abide by your judgement without
a word. Remember the terms of our offer—if you
want to return the Melotte, you may do so at our
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No other separator requires a brake
to stop the spinning. The Melotte
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are hardly ever needed on
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feed and care for cattle—how to make more money
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